

OCTOBER, 1961

# ANNIVERSARY ISSUE

# "AR"



# 28



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1D8 7/6 3a £1	7W7 2/6 10a £1
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6C5 5/- 5a £1	958 5/- 5a £1
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6L7 5/- 5a £1	RL18 7/6 3a £1
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6SP5 7/6 3a £1	VR103 5/- 5a £1
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6BL8 16/6	6Y6 5/- 5a £1
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Stand to suit 15/- extra.

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Price **£13/17/6** inc. tax.

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3-4 Mc. range ... **£7**  
4-5.3 Mc. " ... **£5**  
7-9 Mc. " ... **£6**

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2.5 volts c.t., 10 amp.; 12 volts 3 amp. New. "S" Power Supply type. **£3/0/0**.

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230 volts to 110 volts, 1kv., **£8/10/0**.  
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## 5.5 Mc. VIDEO COILS

Contains slug-tuned coil former.  
6d. each.

All parcels sent ordinary post unless otherwise stated.

# Editorial



## THE TOP FIFTEEN

OUR American contemporaries have been blessed or plagued, depending on how one looks at it, with large increases in their Amateur population over the years and consequently are finding their spectrum space becoming more crowded. There has also been a gradual exodus from c.w. to phone, particularly in view of the relatively new s.s.b. type of emission.

In order to partially solve the problem on 20 metres, the F.C.C. in America, on the 10th March, 1960, expanded the phone band from 14.2-14.3 Mc. to 14.2-14.35 Mc. Before the change, U.S. Amateurs used the low end of the band for a.m. contacts with Canadian and DX stations, and the upper portion of the band for s.s.b. contacts with DX using 14.3-14.35 Mc.

The pressure on the F.C.C. for additional phone space on this band has gradually increased since 1946 and was implemented last year to the new frequencies mentioned previously. This decision was not taken lightly but only after very careful consideration of all the factors involved, including the international effects of such an increase. However, the primary concern of the F.C.C. was for their own domestic situation and this eventually decided the position.

We in Australia are fortunate that the P.M.G.'s Department has left the internal working of our allocated bands to the judgment of the Amateur himself in how he uses them. We have endeavoured to accommodate operators using various types of emissions by gentlemen's agreements and generally this has proved satisfactory.

The A.R.R.L. has now seen fit itself to adopt similar means with their new phone allocations on 20 metres to assist and encourage DX s.s.b. stations. Their proposal is that DX s.s.b. stations should operate between 14335 and 14350 Kc. and only work U.S. stations on 14335 Kc. or below. When one realises the pressure in the U.S.A. for greater phone frequencies, this is a most generous gesture on their part.

This proposal will only work if you—the Australian s.s.b. operator—makes it work. No self disciplinary scheme will ever be 100%, but if you observe the following three points, you will contribute towards a habitable band as opposed, as an alternative, to a ruthless jungle of QRM.

The three rules for VK s.s.b. operators are:—

1. USE the top 15 Kc. of 20 metres regularly.
2. WHEN calling CQ announce you will only listen for Ws and Ks on some frequency below 14335 Kc.
3. DO NOT work any W or K station on the top 15 Kc.

W.I.A. FEDERAL EXECUTIVE.

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# Mullard Alloy Diffusion Technique

## High frequency transistors for cordless radio receivers

One of the most important recent advances in transistor technology is the alloy-diffusion technique used by Mullard. This technique provides transistors with uniform high frequency characteristics and enables the design of low cost cordless radios of superior performance.

# OC169 - OC170 - OC171

Transistor Type	OC169	OC170	OC171
Collector Voltage ( $V_{cb}$ max.)	-20	-20	-20 V
Collector Current ( $I_c$ max.)	10	10	10 mA
Max. Dissipation ( $25^\circ$ C)	80	80	80 mW
Typical parameters at (measured at $V_{ce} = -6V$ , $I_c = 1mA$ )	0.45	10	100 Mc/s
	{common emitter}		{common base}
Input Conductance	0.4	2.5	23 mmhos
Input Capacitance	80	65	-6 pF
Feedback Admittance	< 100	100	600 $\mu$ mhos
Transfer Admittance	36	32	14 mA/V
Output Conductance	7	60	350 $\mu$ mhos
Output Capacitance	7	4.5	2.6 pF
Ideal Unilateralised power gain	61	32	< 10dB



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# D.C. POWER CONVERTER FOR MOBILE

A. L. WEST,\* VK5LA

• The writer explains in clear, concise fashion exactly how to make your own transistorised power supply. Must reading for all mobileers.

Volts per turn =  $4 k B A f \times 10^{-8}$   
where  $k$  = form factor of wave = 1 for square waves.

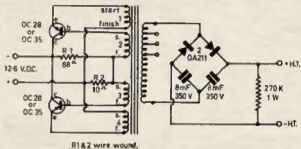
$B$  = flux density used (in gauss) (17,000).

$A$  = total effective core area (in sq. cm.) ( $2 \times 0.93$ ).

$f$  = frequency of operation (cycles per second) (400).

If 400 c/s. is chosen as the operating frequency one arrives at the figure of 2 turns per volt.

Assuming a battery supply voltage of 12.5 and allowing 1 volt total for transistor knee voltage and transformer resistance drop, the effective primary voltage becomes 11.5. At 2 turns per volt the primary should have  $2 \times 11.5$  or 23 turns.



Now for the feedback winding. To maintain a collector current of 6 amps., a base to emitter voltage of up to 1.4 may be required, depending on the individual transistor characteristics. Doubling this to allow a safe margin, it is found that the feedback winding should deliver about 14.3 volts when the primary is energised with 11.5. Thus the number of feedback turns should be about 1.25 times the number of primary turns. Say 29 turns.

The secondary winding will depend on the user's specific requirements and on what type of rectifier system is employed. It is recommended that where possible a full wave voltage doubling circuit be used. This has the advantage of requiring only half as many secondary turns (and silicon diodes) as a bridge system and represents a significant saving in transformer insulation and manual labour requirements. Half wave circuits are unsuitable as they load the transformer unequally on alternate half cycles and result in poor efficiency and uneven load sharing by the two transistors. Because of the square voltage waveform at the secondary, the d.c. output voltage is

an integral multiple of it and if one uses a doubler circuit and 2 turns per volt, then the required number of secondary turns is equal to the desired d.c. output voltage. It is perhaps a good idea to provide a number of taps to allow for different requirements which may arise.

A topic which should be mentioned is overshoot of the switching waveform which increases unnecessarily the all-round voltage stresses and may lead to breakdown. It is greatest at no load and especially with cores which have a poor ratio of permeability to reluctance (e.g. t.v. type ferrite U-cores). The best type of core from this viewpoint is the toroid, but these are rather difficult to wind. With the transformer described overshoot does not present a problem, being 15% at no load and 10% at full load. Bifilar winding techniques are not considered justified in this particular instance.

A word or two about component ratings. With the full wave voltage doubler and square waves the peak inverse voltage experienced by the diodes is twice the transformer voltage, or the

same as the d.c. output voltage. Silicon diodes OAZ10 are suitable for outputs of 300 volts or so, while for higher voltages up to about 800, OAZ11s should be used. These figures are somewhat conservative and allow for no-load operation and abnormal battery voltages. Clearly the condenser voltage is half the output voltage.

Some forward bias is necessary to start the device and to maintain correct operation at full load. If it is found that the output voltage falls off and transistor dissipation increases rapidly before the rated power output is achieved, then resistor R1 should be lowered in value to correct the condition. The optimum value may depend somewhat on the individual transistors, and whether or not operation at full load is required.

Incidentally, the supply is self-protecting in that if short-circuited, oscillation ceases, or drops to a low frequency, the input current falling to a non-destructive value.

When operating correctly the transistor dissipation is low and only a small heat sink is required, while the

(Continued on Page 12)

THIS article describes a transistorised d.c. power converter suitable for operating portable or mobile gear from a 12 volt battery supply. It uses a pair of OC28 or OC35 transistors with a saturating core transformer and can deliver a d.c. output power of 70 watts with an efficiency of 82%. At 12.5 volts input this represents a battery drain of 6.8 amps., which compares more than favourably with an equivalent disposals generator drag of about 11 or 12 amps. In addition, the transistor device has no astronomical starting current and is only a small fraction of the weight and size of the generator.

Most transistor power converters intended to furnish a d.c. output may be classified into two main groups; those which use one transformer and those which use two. The former is the more common and has the great advantages of cheapness and simplicity, while the latter, which incorporates a low powered driver stage, is used where large powers are to be converted or where frequency stability with load variation is desired. The converter described herein uses one transformer only and two power transistors in a common collector push-pull switching circuit.

Of the three basic configurations possible, the common-collector circuit was chosen for two main reasons. Firstly, the transistor base current adds usefully to the primary input, and secondly because the two transistors may be mounted together on a common plate without the need for insulating washers. Because the switching waveform is square, the peak current per transistor is equal to the total average input current from the supply and the figure of 6.8 amps. mentioned above is clearly beyond the capabilities of transistors of the OC16, 2N301 size. Now available are OC28s and OC35s which, with collector and emitter ratings of 6 and 7.2 amps. respectively, are ideal for the purpose. They are also comparatively cheap. The main difference between them is voltage rating which is not very important in this case, so either will do.

For the transformer there are two possibilities. One is to use a ferrite core and a switching frequency of a few kilocycles; the other is to use an iron core operating at a few hundred cycles. The latter course was chosen as it appears that suitable ferrite cores of adequate volt-ampere rating are not readily available here.

A manufacturer's catalogue was consulted and it was decided to use two C-core loops of 0.004" grain oriented silicon iron strip type HWR 10/8. These have a saturated flux density of 17,000 gauss and an effective cross-sectional area of 0.93 square centimetres for each complete loop.

In designing transformers, the following relation may be used:

\* 7 Lancelles Ave., Beaumont, South Australia.



# THE ANTENNAMATCH\*

## Part 2—Construction and Use

F. HICKS-ARNOLD (G6MB)

FOR Amateur use, the original circuit devised by Virgil True has been considerably simplified and is now as shown in Fig. 4, an inspection of which reveals that the complete unit is divided into three screened sections, each being further sub-divided so that all r.f. components actually in series with the transmission line are screened from those components which carry d.c. only. The mechanical layout and construction can be seen in the accompanying photograph.

### THE IMPEDANCE DETECTOR COMPONENTS

C2 in the impedance detector section is made up of a 500 pF. ceramic feed-through type condenser with 250 pF. in parallel, making a total of 750 pF. This provides better by-passing and filtering out of r.f. from the line to D2 whilst performing its original function as part of the capacity divider C1-C2.

The 1 ohm resistor R1 is made up of ten 10 ohm one watt composition resistors in parallel mounted on the outside of a paxolin tube 1" in diameter and 1½" long. The 300 pF. condenser (C13) and D1 (CG6E) crystal associated with R1 are mounted inside the paxolin tube with the connection to R2 brought out at right angles to the axis of the tube. The complete assembly is mounted directly between the co-axial input socket CS1 and the end of the rod forming L1 (see the description of the Phase Angle Detector). RFC1 is a standard 2.5 mH. receiving type r.f. choke directly connected between one end of R1 and earth. It provides the d.c. return path from R1, thus completing the bridge circuit.

The galvanometer M1 can be mounted remote from the impedance bridge as it only carries d.c.; it is decoupled by RFC2, C8 and C7. C4 and C9 are of the ceramic feed-through type, serving both as decoupling condensers and as feed-through connections.

All components other than R1, R2, C4, D1 and RFC1 are mounted above the screened compartment.

### THE PHASE ANGLE DETECTOR COMPONENTS

Inductances L1 and L2 are, in fact, two brass rods. L1 consists of a ¼" rod 5½" long, suspended between feed-through insulators or bushes at opposite ends of the screening box. The diameter of the rod is not critical, although its size will affect the capacity coupling between L1 and L2. The sampling loop L2 is another brass rod ¼" in diameter bent into a "U" shape, with legs 2½" long and a centre portion 4" long, which is mounted with the two vertical legs through feed-through insulators in the upper side of the screening box. The horizontal portion is placed above and parallel to L1 to provide inductive coupling to the latter. Spacing between the inductances is approximately 1/16".

General considerations underlying aerial matching and the design and use of The Antennamatch were described by the author in Part 1 of this article which was published in the September issue of this journal.

The legs of L2 are threaded where they pass through the chassis feed-through insulators and are held in position by nuts above and below the insulators. By adjusting the position of the nuts, the coupling between L1 and L2 can be varied as necessary. The centre tap connection to L2 is passed through the upper side of the screening box by means of the 500 pF. feed-through condenser C9.

A rather simpler method of constructing L1 and L2 is to use a 6" length of co-axial cable, terminating the outer copper screening about an inch from each end, with the inner polythene insulation extending slightly beyond the outer screen. Connections are then made to the centre conductor, which acts as L1 and is connected directly into the line (as in the case of the ¼" diameter brass rod used in the first method of construction). The outer screening becomes L2. Such construction has all the essentials of the original, i.e. a length of line forming L1 closely coupled to a centre tapped loop L2. Whilst it is not possible to adjust the coupling, the arrangement works well and is certainly far simpler to make.

All other components, including the diodes D3 and D4, are mounted outside the inductance screening box. As they carry d.c. only, their exact arrangement is not critical but a symmetrical layout is desirable.

CG6E crystal rectifiers were selected for use in the phase angle detector because their high value of back-

resistance made it easier to zero the indicating meters. If only lower back-resistance crystals of the 1N34 type are available, it is suggested that each should be shunted by a resistor of about 220,000 ohms as recommended by the General Electric Co. Whichever type of crystals is used, all should have approximately the same back-resistance in order that a zero output at balance may be obtained.

### OUTPUT SECTION

The output section consists of an r.f. ammeter, a low loss switch and a dummy aerial of 75 ohms impedance.

The r.f. ammeter should have a full scale deflection of about 2 amps. and be of the type having an external thermocouple which can be placed inside the screening box close to the switch. Placing the thermocouple directly in the line carrying the r.f. current introduces as little disturbance of the impedance of the line as possible and permits the meter to be placed remote from the line.

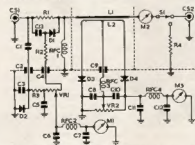
### R.F. VOLTMETER

If such an ammeter with separate thermocouple is not available, an equally useful indication of power output into either artificial load or aerial may be obtained from a simple r.f. voltmeter connected across the line to read the voltage developed. If accurate power readings are not required, the r.f. voltmeter need not be calibrated. Circuit values should be arranged so that power in the artificial aerial, i.e. 75 ohm load, gives about half-scale deflection. Provided the reading when switched to the aerial position is the same, that is all that is required for comparison of power into the dummy load or into the aerial system.

A simple circuit for such an r.f. voltmeter is given in Fig. 5 (g). As large voltages should not be applied to a crystal diode, a resistance network to reduce the applied voltage should be used across the total r.f. voltage in the line. For good linearity of scale deflection when using a 1 mA. meter, the network should be made up of two resistances, the upper one being the line impedance times 100, and the lower being the line impedance times 10, i.e. 7,500 ohms and 750 ohms for a 75 ohm line. This network, together with the crystal diode, r.f. choke and decoupling condensers (1,000 pF.) should be placed as close to the output switch as possible. The lead carrying the d.c. output to the meter can then be of any convenient length without disturbing the impedance of the line or carrying r.f. currents outside the screening box.

### AERIAL LOADING SWITCH

The switch for selecting artificial load or aerial proper should be a low loss type capable of carrying an r.f. current of 2 amps., that used in units of the TUS series being ideal.



## ARTIFICIAL LOAD

The artificial load must, as far as possible, have only a resistive element capable of dissipating at least 100 watts. The type 701 heavy duty resistors made by the Morgan Crucible Co. Ltd. are suitable for such use in high frequency circuits as they are non-inductive and have a high surge capacity. These resistors are rated at 90 watts for a rise of 200°C. for continuous loading and can be obtained in exact values from 20 to 2,000 ohms direct from the makers for about 20/- each. However, supplies have been, and are believed still to be, available on the surplus market for a value of 80 ohms—near enough to the required 75 ohms to be satisfactory in The Antennamatch.

Such resistors are a homogeneous mixture of conductors and ceramic bonds and are of their stated resistance at full dissipation rating only. The resistance is somewhat different from the "hot" value; this point should be borne in mind if any attempt is made to check the values of those obtainable as surplus.

The resistor used in The Antennamatch described in this article is mounted externally to the screening box and between it and the front panel. One end is earthed directly to the box by means of a spring supporting clip, the other end being insulated and connected to the serial loading switch.

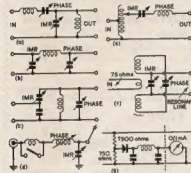


Fig. 5—Aerial matching networks for independent variation of impedance and phase angle. (a) Cantilever network, (b) Pi-network, (c) Capacitance division, (d) Low-high match, (e) Auto transformer, (f) Link and pi-network for high impedance tuned lines, (g) Simple r.f. voltmeter. The crystal diode should be a type CG6E, the two condensers 1,000 pF, and the R.F.C. 2.5 mH.

## INDICATING METERS

Whilst any form of centre zero reading meter of about 100  $\mu$ A. full-scale deflection may be used, there are available on the surplus market very suitable meters in the form of the "Left" and "Right" indicators used with R1155 receivers. These meters have a full-scale deflection of around 45  $\mu$ A. when all internal shunts have been removed.

The type to be preferred is designated Ref. No. 10Q/2—this has two complete movements with two magnets and balance adjustments on both ends of the moving coil pivot. The built-in series and parallel shunts should be removed and connections from the moving coils made direct to the terminals on the back of the case.

Centre marks should be made on each scale with white ink or paint before

adjusting the pointers to these marks by means of the external zero adjusting screws. When this has been done, the complete movements should be withdrawn from the case and the back hair spring tensions adjusted to balance the pressure exerted on the pointer by the adjustment to the front springs. By repeated adjustments to front and back springs, balance should finally be arrived at such that the pointers remain at the centre scale marks with the meter placed in any position.

No attempt should be made to adjust the front springs with the movement removed from the case, as difficulty may be experienced in locating the zero adjusting screws in reassembly if this is done.

## THE SCREENING BOX

The Antennamatch shown in the accompanying photograph is contained in a screening box of 12" overall length, internal screening being provided to form three compartments of 3", 6" and 3" in length, 3" in width and 4" in height. A further compartment extends along the full length of 12" and is approximately 2" in height. The construction can be clearly seen in the illustration and forms a complete and compact unit. The dimensions are not critical but are given as a guide to constructors. The box may be made of 18 s.w.g. aluminium or tinned mild steel.

As can be seen, the unit is mounted on the back of a standard rack panel using stand-off pillars to allow the type 701 dummy load resistor to be held between the panel and screening box. Co-axial connectors are fixed on each end of the box. For ease of component assembly and wiring, the top and back should be covered by removable plates.

## USING THE ANTENNAMATCH

Some form of aerial matching unit in which it is possible to vary both the load impedance and the reactance thrown back is essential in order to gain the maximum benefit from all the information provided by The Antennamatch. Various suitable networks which enable both these conditions to be varied are shown in Fig. 5. The circuits

are suitable for both single ended and twin line feeders. All have been used by the writer with success, but particular attention is drawn to network F, which is very suitable for use with all forms of centre fed aerials normally fed with tuned lines. It permits accurate matching with wide variations of feeder lengths and impedances.

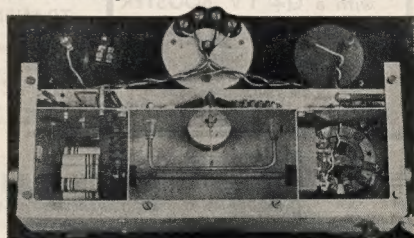
The split coil should be wound on a suitable former with the two halves approximately 1" apart. The inner ends are taken to the feeders and are across the condenser marked "impedance". This should have a maximum capacity of approximately 250 pF. in order to cover wide variations of impedance and should have a plate to plate spacing great enough to prevent r.f. arc-over at maximum power and voltage. The condenser marked "phase", connected across the outer ends of the split coil, should be of approximately 150 pF. maximum capacity and of sufficient spacing to prevent r.f. arc-over.

Between the two halves of the split coil and on the same former is wound the link coil which is connected to the transmitter by 75 ohm co-axial cable. The Antennamatch should be placed in series with this feeder. For all bands above 3.5 Mc. a one turn link should be sufficient but two turns may be necessary on 3.5 Mc. to give correct impedance and loading at zero reactance. Separate coils should be used for each band; their inductance must be such that it will resonate at the frequency in use with the feeders and aerial connected.

In operation the transmitter should be tuned up with the output switched to the artificial load with the p.a. loaded to the design figure. Both centre zero meters should be correctly zeroed, after which the output can be switched to the aerial proper.

Simultaneous adjustment must then be made to both the impedance and phasing controls until a point is reached where the aerial becomes resonant and takes power from the transmitter. There will be some interaction between the adjustment of these controls as the correct values are approached but with a little practice one adjustment can be

(Continued on Page 12)



Close up view of the interior of the screening box showing the construction of R1 and L1 and L2.



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# A REFERENCE SHIFT MODULATOR FOR MOBILES

VIC. COLE,\* VK2VL

ONE of the problems in building a mobile rig is the modulation transformer, a good one is very pricey and much too large for a small low-power rig, so with this in mind much time was spent with text books, etc., to find a suitable circuit which did not require a transformer.

One solution was screen-grid modulation, but this method provides a carrier efficiency of only about 30%.

Another was Helising, or choke coupled plate modulation. This is an old and well-tried system where the modulation transformer is replaced by a choke—a common junk box item. However this system has two short-comings. First, since the maximum plate dissipation occurs with no audio input the permissible modulation plate power is limited to the rated plate dissipation of the tube. Second, the maximum plate current swing is severely limited.

A variation of the Helising, called "class K" modulation looked good, an increasing audio level increases the bias on an audio clamp tube and thus increases the modulator screen voltage.

The modulator tube is operated at zero bias so that a high plate current swing can be obtained, but this system requires an extra "clamp" tube and I did not have the space to spare.

On looking through more magazines, etc., I found some information on Reference Shift Modulation. This appeared to have all the advantages and none of the disadvantages of the above systems.

It does not require a fixed bias supply, no clamp tube is required, and the driver tube requires very little power, so a mobile rig was built in a box 6" x 3 1/2" x 5" and has been giving very good results over the past six months.

Reference shift modulation is, basically, bias shift modulation with positive bias, this might seem queer, but it has no ill effects as the modulator tube is operated as a zero bias triode. It is not a new system of modulation but, surprisingly, it is not referred to in many of the well known text books.

The basic reference shift circuit centres around V2B in the diagram which is the driver tube, the output of the cathode follower driver V2B is an audio voltage impressed on a positive d.c. voltage equal to the peak audio voltage. The average plate current of V3 is therefore proportional to the audio input voltage.

The voltage divider R7-R8 applies a fraction of the cathode voltage to the anode of Cr1, output from Cr1 is filtered by C4 and applied as a positive d.c. reference level to the grid of V2B through R6, the resulting increase in reference voltage increases the average cathode current which, in turn, increases the d.c. cathode level. The d.c. output level of V2B thus increases as its audio output level increases.

The modulator tube V3 is a zero bias triode with positive bias, most pentodes will operate under these conditions. This bias is the d.c. output level of V2B and as this is a function of the audio level, the average plate current of V3 is also a function of the audio level, swinging between cut-off and saturation providing a plate efficiency of 50% or more and operating similar to a "B" class system where the plate current is at a low value when no modulation is applied—a good feature in saving a little drain on the car battery.

Driver tube V2B should have a low plate resistance so that a low source impedance is presented to the grid of V3. Tubes that fulfil this requirement are 6C4, 6S4, 12BH7, 12AU7.

Resistors R7 and R8 are a voltage divider, loaded by a relatively high impedance and should not present an appreciable load to V2B, the total resistance should be 5 to 10 times the load presented by the grid of V3.

You can experiment with the values, but both resistors must be equal in value.

Rectifier Cr1 can be any type of diode that has a maximum rated back voltage higher than the reference voltage at the junction of R6 and C4. In my case the voltage varied between +20 and +60 volts so I used a diode with a back voltage of 100 volts rating.

Do not use diodes in series. Two cost more than one and they cannot be depended on to have equal back resistances.

If you wish to try this system in a home rig of 30 to 50 watts, use a valve rectifier.

I used a 12AU7 for V2B because I wanted 12v. filament and had one in the junk box. A 6C4 would work well and the speech amplifier end can be

varied to suit the particular tubes and microphone you have.

Re microphones, avoid if possible the use of crystal types. They are not rugged enough for mobile use. A car can get mighty hot on a summer day. Dynamic mikes stand up well if you want that little extra quality, but the old carbon types are best for reliability. It is surprising the number of times you will bump the mike on the steering wheel or drop it off the seat onto the floor while talking, changing gear and turning a corner—all at the same time.

As I had plenty of gain in the speech amplifier the cathode by-pass condenser was left out of V2A to save some space.

The 6BW6 was chosen so I could series the filaments with the 6BW6 in the transmitter final.

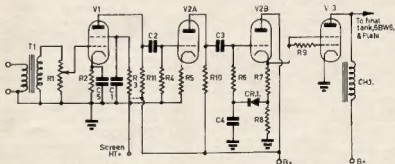
The choke CH1 is 6 henries at 80 mA. You can experiment a bit here, the inductance does not appear to be critical as long as the reactance is equal to or higher than the p.a. plate impedance, and the lower its resistance the better.

While it is not claimed that this system is the answer to all modulator problems, it is simple and will give good results in a low power mobile rig.

## VK-ZL DX CONTEST, 1961

W.I.A.'s F.C.C. has received numerous criticisms on the lack of VK and ZL stations taking part in this world-wide Contest. So what about it chaps? Give it all the support you can. It needs it!

The rules of this Contest were published in the August issue. The phone section is from 1000 GMT on Saturday, 30th September, to 1000 GMT on Sunday, 1st October. The c.w. section is from 1000 GMT on Saturday, 7th October, to 1000 GMT on Sunday, 8th Oct.



REFERENCE SHIFT MODULATOR.

- C1—0.1  $\mu$ F.
- C2, C3—0.001  $\mu$ F. mica.
- C4—0.005  $\mu$ F. mica.
- C5—25  $\mu$ F. 40v.
- R1—0.5 meg. potentiometer.
- R2—1,000 ohm, 1 watt.
- R3—1 megohm, 1 watt.
- R4—0.5 megohm, 1/2 watt.
- R5—10,000 ohm, 1 watt.
- R6—1 megohm, 1/2 watt.
- R7, R8—47,000 ohm, 1 watt.
- R9—20,000 ohm, 1/2 watt.
- R10, R11—0.25 megohm, 1 watt.
- T1—Microphone transformer.
- CH1—6 H., 80 mA. choke.
- CR1—Diode, 1N35A, GEX45, etc.
- V1—6AU6.
- V2—12AU7.
- V3—6BW6.

\* 187 Lakemba Street, Lakemba, N.S.W.

# V.H.F.—THE PRESENT STATE OF THE ART

**J**UST recently there has been a great hue and cry about the lack of news from the six metre boys with regard to activities and the like. How can there be news when there is no activity? What has happened to the exclusive six metre operator of the DX season? Has he got cold feet? Or can't he be bothered with the general friendly ragchew on six metres during the winter?

Of the 60 odd stations I have so far worked on the 6 m band, I can say almost without contradiction that I have worked 10 or so in the last two months. I heard some of them on—the last VK2-VK4 breakthrough. They came on for an hour and have not been heard since. One of them missed the break, had a local contact to find this out and went off the air after that contact. Why? Aren't the local boys on 6 m good enough to talk to? Don't they represent a big enough challenge to the powers of your "wonderful" equipment?

Your only fooling yourself. It only takes a watt to work VK4-2, 5, etc., during a breakthrough. Almost anything with a piece of wire sticking out of it will do for the receiver, but you just try and get that watt through to a local station. That is an achievement. Try a consistent contact over 600 miles, winter or summer! There you are achieving something. Those things will prove your equipment.

Do you bother to listen to anything below a so-called S9? Do you just dismiss it as "he hasn't got his beam in my direction"? How about getting up and turning your beam around, or is that just too much hard work? There are, or so I was taught, four main compass points—N, E, S, W. When you call CQ, call it in each direction; if somebody doesn't come back to you there is something definitely wrong. I would suggest you check your equipment in this case, maybe the converter is at fault. Maybe the noise level is running S6-8. It does here, too, but still the majority of metropolitan stations can get a strength report of S8-9 from here, off the side or back of their beams mind you.

When you do eventually come on the air and call CQ, the call is general and is intended for anybody, so by rights you should answer the first person you hear calling you. This clique habit of tuning the band to see if one of your mates is on is a disgusting practice. If you want to talk to your mate, call him and don't make it a general call.

However, if he doesn't come back, how about making the call general, there are other Amateurs around who may like a contact, maybe waiting for somebody to indicate his presence on the band so that they can try out their transmitter, etc.

Those are my opinions on why, on 6 m, there is lack of interest in 6 m and consequently lack of news. There are, however, a few other points on these v.h.f. bands which are certainly screwy.

## USE OF SIX METRES

We have (had?) four megacycles of band to play around with. On 6 metres we use densely the first 500 kc. The number of stations on 6 m could quite easily fit in the 500 kc, with tons of room to spare. Other than that there are a dozen stations probably whose crystal frequencies put them above this. Is it any wonder then that the P.M.G. want to take away two megacycles of this band? 3,500 kc. of it is virtually wasted space, we don't use it, so why the great hullabaloo over missing 2,000 kc. of it? After all, we still have 1,500 kc. which will not be used. All right, so it's an International allocation, but at least most of the other countries use it. The P.M.G. is not blind, nor is it independent, it must pick up channel space where it can and what better place than the unused portions of the Amateur bands. It's not activity on the bands that will help us keep them, it's using them. When you get given 4,000 kc., for Pete's sake use it or you soon won't have 4,000 kc.

Much the same goes for 2 m, but since I don't use this band I won't say anything.

## SCRAMBLES

These I am getting fed up with, mainly because after one hour total operating time in two of these farces I have a total of eight points, and I can hear nearly every station quite a few db. over 9 (my 9). As I said before, there are four points to the compass, how about listening in each direction or better still put up a turnstile. After all, all my DX has been worked using one of these and I've got and given just as good a report as six elements. The use of one of these antennae may well be the difference between that deciding point where somebody didn't bother to turn his beam. Try it anyway, then everybody has a chance of scoring, not just those with S9 (anybody's) signals.

## REPORTING

This is another practice which is being abused, typical example being: "If I can hear him and understand him, 5 x 9." This does not help the bod at the other end. After all, he was probably 5 x 9 last time but is 6 db. weaker this time. It doesn't cost much to install an S meter in your receiver.

All that is required are a couple of pots (5K and 100K), two resistors (1000 and 100 ohms) and an old aircraft temperature gauge. Connect the 1,000 ohm resistor between HT+ and IF can B+, the two pots in series across HT+ and earth, and connect the meter between the junction of the 1,000 ohm resistor and the IF can B+ and the junction of the two pots. The pot closest to HT+ is the 5K one. The 100 ohm resistor shunts the meter.

To adjust the meter take the particular i.f. tube out and adjust full scale deflection. Put the tube back in, disconnect the aerial and adjust the 5K pot for zero. Decide on your own scale

and stick to it. It at least makes your reports reliable, even if not accurate.

Quality is not an important factor in our transmission, but readability is. There is quite a big difference between the two and also a big difference in the amount of bandspace used, and on the "crowded" v.h.f. bands bandspace is important. Try restricting the top and bottom of the audio range and see if it doesn't make a difference.

Just try a few of these things, that's all I ask. After all, it's what you are allowed on the air for in the first place.

—“One Angry Young Man.”



## HINTS AND KINKS

### PAINLESS MOUNTING OF THE MOBILE ANTENNA

Those keen mobileers who are sometimes dismayed at the thought of drilling holes in the new car, or fitting unsightly brackets at the rear to mount a loaded whip, take heart!

I obtained a 4 ft. 6 in. length of thin walled (1/32 in.) brass tubing, 5/16 in. inside diameter. (Obtainable from Gunnersen Allen.) This size slides smoothly over the standard h.c. antenna. At one end is the usual loading coil and a 4 ft. section of brass tubing completes the antenna on top.

A piece of dural tubing was attached to a block of polythylene drilled in the centre for a snug fit and the lower section of the whip slides through. The other end of the dural is suitably flattened and drilled for attachment to the side mounting bracket on the sun visor and gives rigidity to the antenna.

The antenna loads normally and may be set up or dismantled and stowed in the boot in minutes.

As my rig (converter and tx) is concealed in the glove-box, the XYL and I are now on speaking terms when Sunday driving!—VK3AHG.

### AN AID FOR YOUR BEAM

I do not know whether the following idea is original or not, but have found it quite effective and easy to construct. It has been in use at this QTH for over 18 months now. The only maintenance being a drop of oil now and then.

The main item is a 3" breast drill which gives a very slow movement when turned by a motor or handle coupled by a shaft held in the chuck. A coupling (water) is welded on to the centre of the main wheel of the drill, into which is screwed the pipe which eventually supports the beam. The weight of the mast is taken by sitting the underneath section of the drill into a slot cut in the top of a piece of 1" or 1 1/2" pipe which is set in concrete at the base of the tower.

The mast here carries a 6 element 144 Mc. and a 4 element 50 Mc. beam, and rotates fully without any trouble.

—C. Abernathy, WIA-L2211.

# THE FRANKLIN OSCILLATOR

ARTHUR J. BOWMAN,\* VK2ASB

THE Franklin Oscillator has long been recognised as one of the most stable v.f.o.s. possible to construct without elaborate precautions against drift, either short time drift or warm up drift.

The oscillator alone to be described surpassed all the crystal oscillators the writer has built to check the stability. It even surpassed the Bendix frequency meter.

The unit was built on a chassis 9" x 5 1/2" x 2" with a special box 3" x 2" x 9" for the tuned circuits.

The Franklin is claimed to be stable to within a drift of 25 c/s. up to 7 Mc.

but I found silvered mica to be superior. Originally C1 and C2 were 2.2 pF. but it was found that the oscillator tended to drop out of oscillation on parts of the band so C1 was increased to 3.3 pF. and the oscillation continued all over the band.

A 0.001  $\mu$ F. silvered mica was used for C6 but as this is rather a large physical size, a 0.001  $\mu$ F. N.P.O. or even Hi K could be used if so desired.

R1 was a selected 1 megohm 10%  $\pm$ w. This value was selected on a R/C bridge as being exactly 1 megohm, but 10% tolerance is quite adequate. R6 was a

The value of R6 must be kept as low as possible to limit the effects of the 6CB6, particularly when it is removed from the socket.

The filament voltages on V1 and V2 were reduced to 5.0v. and the cans on these valves were covered with asbestos string. This tended to limit the effects of changes of room temperature.

A shield was placed around V1 components, as shown, to prevent feedback. R4 was fed through the shield to the h.t. and decoupling.

The transformer T1 was an old transformer (i.f.) out of a 522 receiver. Capacity was added to bring it from 12 Mc. to 5 Mc. Then a resistor was placed across the primary to dampen the tuned circuit to obtain a broad-band effect.

The leads from the two coupling condensers should be kept as short as possible. All earth points to the chassis were wired with 12 s.w.g. tinned wire and all points were connected with the same type wire.

A small crystal oscillator for band checking was wired in, although this has not been shown in the diagrams. If you have a crystal calibrator on your receiver, as most modern sets have, the crystal will not be necessary.

The power supply must be well regulated with a VR105 or VR150. Hit the VR tube really hard by applying about 210 volts to it, but don't exceed the 30 mA. limit imposed by the tube ratings.

After the VR tube connect about 50  $\mu$ F. in electrolytics across it and then some if necessary. (A resistor should be placed in series between the VR tube and the high capacity—otherwise the VR tube will "oscillate" or motorboat.

Ed.) Every bit of 50 cycle ripple must be eliminated or the oscillator will tend to be modulated with the 50 cycles.

All other resistor and capacitor values may be normal quality components.

## COIL AND TUNING CONDENSER ASSEMBLY

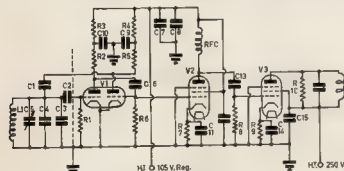
A layer of 1" asbestos was glued to the inside of the metal box. The coil and condenser was mounted inside, then another layer of 1" asbestos was glued to the outside of the box for additional heat insulation.

The coil was 8 turns of 14 s.w.g. enamel covered wire on a 1 1/2" ceramic former. The former was taken from the v.f.o. of an AT5. It must be wound very tight and if possible set with goo.

The tuning condenser was a 10-110 pF. ceramic mounted condenser. A 100 pF and 150 pF. (both 5%, silvered mica) condensers were placed across the tuning condenser. This combination gave 5.0 Mc. to 5.20 Mc.—ample coverage for 7 Mc. and 14 Mc. (on sideband.

Ed.) Components inside the coil box were wired up using 12 s.w.g. tinned copper wire. The two coupling condensers, C1

(Continued on Page 12)



FRANKLIN OSCILLATOR.

- C1, C2—2.2 pF silver mica, 5% tolerance.
- C3, C5, C15—100 pF silver mica.
- C4—150 pF silver mica.
- C6—150 pF variable.
- C7, C9, C10, C11, C12, C14, C15—0.01  $\mu$ F. mica.
- C8—1  $\mu$ F electrolytic.
- R1—1 meg., 1/2 watt.
- R2, R5—50K, 1 watt 1% HI-stability.
- R3, R4—1.5K 1 watt.
- R6—15 to 25K 1/2 watt.
- R7, R8—470 ohms 1 watt.
- R9—100K 1/2 watt.
- R10—15K 1 watt.
- V1—12AT7.
- V2, V3—6CB6.

The one built was stable to within 0 c/s. drift at 5 Mc. for a period of six hours.

The voltages applied to the oscillator itself do not effect the frequency—in theory. The author found this to be untrue. The tubes used in the oscillator and buffer have no effect on the stability—there again a slight distortion of fact.

## NOTES ON THE COMPONENTS

Anyway, to the construction. The oscillator found to be most suitable was a 12AT7 into a 6CB6 with a 6CB6 following. The output from this combination was found to be approximately 0.1v. at 5 Mc. The valve sockets must be ceramic.

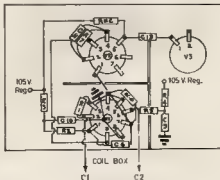
The plate load resistors were 30K 1w. hi stab., decoupled with two 0.01  $\mu$ F. silver mica condensers and two 1.5K hi stab. resistors. These hi stability resistors were 1% but I don't think the decoupling resistors need be quite so good a quality. I do recommend, however, that the plate load resistors should be very close tolerance.

The decoupling condensers, C1 and C2, must be silvered mica. N.P.B. type condensers are claimed to be adequate

value selected by trial and error on the oscillator itself.

If, when you construct this oscillator, you find that it is not very stable, try varying the size of R6 from approximately 10K to 25K.

R1 and R6 must be earthed at the same point with very short pigtail. Single-point earths must be used on the oscillator.



LAYOUT FOR OSCILLATOR SECTION.

\* 107 Crenulla Street, Crenulla, N.S.W.

1961 EDITION

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PHONES: BL 1300, BL 4556

# NATIONAL FIELD DAY 1961—A VK6 EFFORT

AS early as June 1960, it was decided at a meeting of the West Australian V.H.f. Group (Inc.) that the club station (VK6VF) would take part in the multi-operator section of the then forthcoming Field Day Contest. To this end a committee was formed whose task it was to rustle up the receivers, transmitters, aerials, etc., required. All bands, 3.5 to 144 Mc., were to be catered for.

A major windfall came along when Kevin VK6ZCB decided to build his shack into a caravan. This he offered for the occasion as a complete v.h.f. station with additional space available to accommodate some 80-10 metre gear.

More equipment problems were very nicely solved when Jim VK6RU offered his Collins station (75A4 and 32S1 at reduced power). Similarly, Jack VK6BU obliged with his Collins 75A1 and Geloso GL222 (also at reduced power). Thus main equipment requirements were covered.

Antennae became the next problem. Numerous ambitious schemes were suggested but eventually it was agreed that a simple system of dipoles for the h.f. bands, with yagis for the v.h.f.s., be used. The dipoles were planned to be arranged in the form of a "vee" with of course separate feeders for each.

After some rummaging around, a 2k.v.a. alternator, driven by a single cylinder petrol engine, was located. What we are appreciative, the source of this is best left unmentioned!

Finally, a rendezvous was arranged for 9 a.m. on the site (in the Darling Ranges, 1,000 ft. a.s.l.) on 4th February, for the erection of antennae and setting up of gear.

9 a.m. Saturday duly arrived with several energetic persons on hand and ready for work. Kevin's caravan was moved into position and he and Roy VK6ZDS got to work on erecting the v.h.f. beams atop a 50 ft. telescopic mast. The subject of pinched fingers is not popular with Kevin by the way! Meanwhile, the two 30 ft. telescopic masts for the h.f. dipoles were under way, forming, in addition to a convenient gum tree, the three points of the aforementioned "vee". Here Roy VK6ERY gave claim to fame with a stone and length of string!

Problems commenced with the unravelling of prefabricated dipoles. It appeared that more attention had been paid to rolling them up than the possibility that they would need unrolling—talk about wire puzzles!

Some little time later a trial run was made on the alternator with satisfactory, but deafening results on open exhaust system. At first a voltage variation of some 15-30 volts was experienced, but an adjustment to the mixture control corrected this.

As everything seemed to be under control, all agreed it was now time for lunch.

The weather at this stage was very hot and prompted the remark: "... at least this is better weather than the storms experienced by a VK3 team of a previous year." No sooner were the words spoken than some very black

clouds loomed up, thunder boomed, lightning flashed, and down came the rain in a freak cloudburst!

First thoughts were for the unprotected power plant. A canvas sheet, brought along "just in case of emergency," was hurriedly flung over the unit. Obviously, though, some more permanent shelter would be required so two cars were commandeered to support the sides of the tarpaulin. This was fine until a miniature lake collected in the middle. This further problem was overcome per medium of VK6RY and VK6HK who acted as centre posts for the next half an hour or so until the weather cleared sufficiently for some bush timber supports to be cut.

Everything was now felt to be ready for anything the elements could turn on.

At 3.30 p.m. W.A.S.T., Jun VK6RU and Jack VK6BU arrived with their equipment which was set up and tested in quick time. The alternator had been running sweetly for some time now.



Interior of VK6ZCB's caravan, looking to the front. This set-up was used in the National Field Day Contest of 1961.

4 p.m. (W.A.S.T.).—Operation got under way with an added snarl from the power supply and much enthusiasm from the operators—but the team had hardly got into stride when at 4.10 p.m. "old faithful" conked out. Diagnosis—ignition trouble.

At least operations did not cease entirely, thanks to the 50 Mc. transistorised walkie-talkie of VK6ZCB and mobile 50 Mc. gear of VK6ZCB. Several contacts were made thereby.

Meanwhile the boys commenced dismantling the engine amidst much helpful advice from onlookers. After the flywheel had been removed it was found that the magneto was in the process of falling apart. This corrected, the plant was deemed ready to start again.

At this point, VK6RU, not one to waste contest time, left the power tent and headed for the controls of his rig. By the time the 250 volts arrived at the transmitter he was ready for the air.

Contacts came but slowly until just before sunset when once again the engine conked. This time flooding was the problem and fuel was found running freely round the open exhaust. This is not recommended practice! Roy VK6RY again dived in and pulled the "carby" down. This time power was

available after only a ten-minute delay. The plant kept running now until closing time, although on several occasions a dash had to be made to make adjustments to prevent a further stoppage. Voltage varied at random during this period between 150-260 volts!

On Sunday, 12th, operation was more routine with contacts on all bands coming slowly but steadily. Even "old faithful" must have kept in mind the saying, "The better the day, the better the deed," as she kept going during the whole of the day's operating period.

Something of a diversion occurred on this Sunday morning. A visiting Amateur remarked, "If you want a contact on another band you had better come and help me put up my 20 metre quad!" So several bodies took him at his word, climbed into a car and off to his home QTH. After much pulling, juggling and twisting, up went the quad, and the promised contacts were later made. This is really working for contacts!

Tension relaxed as time ran out and everyone was still able to smile and joke about the events of the week-end. We certainly found that much enjoyment had been had by a joint effort in the National Field Day Contest and all are looking forward to next time!

As a closing word, the thanks of the V.H.f. Group of W.A. (Inc.) are proffered not only to those who are mentioned in the text but to the many people who assisted both before and during the event.

## ROYAL CHARTER FOR RADIO ENGINEERS

The Council of the British Institution of Radio Engineers has the honour to announce that Her Majesty The Queen has been pleased to approve the grant of a Charter to the Institution. The Order in Council is dated 2nd August, 1961.

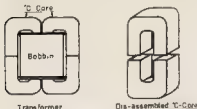
The honour conferred on the Institution seals the seal on its achievements during the past 36 years. The Institution was founded in 1925, when radio engineering, as an industry, was in its infancy.



## D.C. POWER CONVERTER FOR MOBILE

(Continued from Page 3)

transformer temperature rise should be about the same as a receiver type power transformer. A metal box large enough to house all the components should provide adequate cooling area. It is well to remember that the transistor manufacturers permit operation with an internal junction temperature up to 100°C.



Suggested winding details are as follows. The transformer should be wound on a fibre former which may be obtained with the two C-cores and it may help if stout cardboard end plates are made and cemented to the fibre. If modern winding wire with tough, straw-coloured enamel is used (such as Lewmex) there is little need for insulation anywhere in the transformer, but layers of paper or tape should be inserted between windings to provide a flat surface on which to build. If old wire is used then a layer of paper, or empire cloth (if you are a Loyalist) should be interleaved between each layer of the secondary. To ensure

oscillation when switching on for the first time, the start and finish of each primary and feedback winding should be carefully marked and wired up as indicated on the circuit diagram

Primary 1 and 2: Each 23 turns of 18 to 20 s.w.g.

Feedback 3 and 4: Each 29 turns of 26 s.w.g.

Secondary: See text. Use 26 s.w.g.

None of the wire gauges are particularly critical, but if thicker wire is contemplated consult the wire tables to ensure that it will all fit.

When assembling C-cores, keep the halves in the same relative positions as they were when purchased. This will ensure minimum air gap and lowest exciting voltamps. Each core should be clamped together by twisting a loop of stout wire around it, as the special banding strip supplied is hard to use if the proper tool is not available. To reduce vibration, jam the cores in the coil former by using thin wood shavings and to provide protection against climate it is suggested that the entire transformer be boiled in beeswax or dunked in shellac.

At the time of writing three units have been constructed, two by the author, and one by a fellow VK5 Ham.

Here are some test results obtained using accurate model 8 Avo meters:

1. Input: 12.6 v. at 6.87 a.  
Output: 405 v. at 175 mA. = 71 w.  
Efficiency: 82%.
2. Input: 12.6 v. at 4.26 a.  
Output: 410 v. at 110 mA. = 45 w.  
Efficiency: 85%.
3. No load input current = 0.8 amp.
4. Input current with output shorted = 2.4 amp.

## THE ANTENNAMATCH

(Continued from Page 5)

worked against the other until a condition is reached where both the phase angle and impedance indicators have zero readings. In this condition, the r.f. power accepted by the aerial should be the same as that into the artificial load. The p.a. loading should also be equal to that when loaded into the dummy aerial.

Transmitter conditions (that is the values of C1, L and C2) should not be altered after being set up on the dummy aerial and all subsequent adjustments to bring about equal conditions must be made entirely with the matching network.

Experience has shown that with fairly large values of impedance and phase angle condensers widely varying conditions can be catered for. However, if reactance cannot be completely eliminated, i.e. phase angle brought to zero, different values of inductances of the split coil should be tried.

Short acquaintance with The Antennamatch as an aid to correct matching and loading of the transmitter to the aerial will serve to prove its very valuable purpose and will make the user realise just how difficult it is to achieve optimum conditions without it.



## THE FRANKLIN OSCILLATOR

(Continued from Page 9)

and C2, were wired inside the box also. The pigtail wires cut short to prevent vibration.

Incidentally, all components in the oscillator must be mounted very rigidly. No vibration must be permitted. The gang must have a very smooth action.

## CHECKING THE OSCILLATOR

Now a few words on the methods used for checking.

First I beat the v.f.o. with an xtal oscillator just haywired together. There was some drift, about 400 c/s. Next I used a crystal calibrator and for the first hour I found that there was some drift here, too. I was feeling rather disheartened, so I checked it as a last resort on the Bendix BC221.

To my amazement I found that though I had to "correct" the Bendix about every 30 minutes, each time I switched back to "operate" the v.f.o. was zero beat. Several times I checked the v.f.o. to see if it was still operating and sure enough it was.

Then I connected the Bendix output to a c.r.o. and zero beat on the "check" position, watching the pattern on the c.r.o. (a sine wave). When the Bendix was on 50 Mc. I zero beat the v.f.o. and once again a sine wave. Whenever I saw a distorted wave form on the c.r.o. I "checked" the Bendix and sure enough the v.f.o. was exactly zero beat.

I allowed the v.f.o. to run into the Bendix for a total of six hours and not once did I have to reset the v.f.o.

This v.f.o. is the ideal v.f.o. for the s.b. man. The output is not very high, but for s.b. the output is not required to be high.

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## AMATEURS TAKE PART IN PROJECT PHOENIX

The recent party of Victorian firemen which visited country centres in Western Australia contained a number of Amateurs. The visit was sponsored by the Westmore Rural Fire Brigades Radio Group at the invitation of the Bush Fires Board of W.A.

Purpose was to discuss and demonstrate fire fighting methods with particular emphasis on the use of radio. Phoenix was the name given to the project when it was found that every member of the party had suffered serious or total loss in the Victorian disasters of the early 1940s.

Leader of the party was John JAGD, who is President of the Group and operator of the Dunkled Base Station V13JF. Associate Hugh "Rike", affectionately known to firemen as "Bike", New Yorker operator of the Group's base station under his own call V13KJ. Hugh first obtained this licence to work with several Amateurs in the early days of fire radio and pioneered the present system of networks.

The Group took their own cars and equipment and operated on the Weather net frequency of 8005 Kc. Much of the early planning was carried out by the Group Secretary, Tom Kinnerly V13KN. Others included Pat SADDN the S.W. Zone W1CEN Co-ordinator, with XYL Nell, using the call V13KW; Tony SWB and XYL Pauline, operating his old call 3KI; Kevin SAKR who travelled with John SAGD, using V13KK; and Don SAKN S.W. Zone Secretary and deputy co-ordinator of S.W. Zone W1CEN, under the call V13J.

Apart from two notable exceptions, the equipment used was home-brew or custom built to network design much to the surprise of the VLS boys. The local outfit was found want-

ing and was replaced by a spare outfit complete with antenna.

The gear included a re-built 108 and ATRC and a neat little home-brew designed by Bert 7BI, then 3BI. This one uses a 5A4Q5 xtal con. in a 5763 modulated by a 5763 Heising fashion, and a 6AL5 type 600 converter for the car radio. The owner/operator, Tom, another Association member, built and installed the rig which uses the call VL3KN and is the top performer in the network. Ignition interference simply is not by virtue of complete shielding of the whole system. No ignition suppressors are used. The standard tuning knob is absent and the other bloke's interference and those wind driven lighting plants!

Two sets of Amateur gear were taken, that of JAKR and of JAQR. The former was a 100-watt, 1000-kc. rig, the latter a 100-watt, 1000-kc. rig, which somewhat curtailed Amateur activity. The latter, mounted in the car of John BACD, was taken to the house of the late Mr. Kevin JAKR. Our logs showed that in some 25 stations contacted or visited, too many to list. However, among them were SEI QP, who had been a frequent customer of the shop in the Adelaide Hills. At Port Augusta Graham 5GE showed the Group over his t.b. gear, and we were able to get a log for him. He has all-too-infrequent rest and, our sincere thanks for an insight into the Flying Doctor service, he was able to get a log for us. We were with Tom 6TR and his (square-eyed) monitor where the Northern demonstration made a most interesting study of the use of the aristocratic mobile, stole the limelight of course.

Kevin, operating as JAGD/8, distinguished himself by working Tom VK0TC at Wilkes Base on 7 Mc, doing 70 knots or so with the

f.o., as first-end injection for the a.s.b. sig. At Bunbury, Les G.W.L. played host to SAKR, JAKN and ZAGD, and managed to inveigle a tape recording from us for G.W.L. Wally 6A was the only one to get a tape. At Perth, Skipper took a keen interest in the gear and especially the three glass whips. He told us how he overcomes the problems encountered by the high rigidity of the whips by using somewhat humble, and realizing that our own are puny enough. Wally arranged a Hamfest later that evening and those whom we met included George 6GH and XYL, and the 6A's, 6B's, 6C's, 6D's, 6E's, 6F's, 6G's, 6H's, 6I's, 6J's, 6K's, 6L's, 6M's, 6N's, 6O's, 6P's, 6Q's, 6R's, 6S's, 6T's, 6U's, 6V's, 6W's, 6X's, 6Y's, 6Z's, 6AA's, 6AB's, 6AC's, 6AD's, 6AE's, 6AF's, 6AG's, 6AH's, 6AI's, 6AJ's, 6AK's, 6AL's, 6AM's, 6AN's, 6AO's, 6AP's, 6AQ's, 6AR's, 6AS's, 6AT's, 6AU's, 6AV's, 6AW's, 6AX's, 6AY's, 6AZ's, 6BA's, 6BB's, 6BC's, 6BD's, 6BE's, 6BF's, 6BG's, 6BH's, 6BI's, 6BJ's, 6BK's, 6BL's, 6BM's, 6BN's, 6BO's, 6BP's, 6BQ's, 6BR's, 6BS's, 6BT's, 6BU's, 6BV's, 6BW's, 6BX's, 6BY's, 6BZ's, 6CA's, 6CB's, 6CC's, 6CD's, 6CE's, 6CF's, 6CG's, 6CH's, 6CI's, 6CJ's, 6CK's, 6CL's, 6CM's, 6CN's, 6CO's, 6CP's, 6CQ's, 6CR's, 6CS's, 6CT's, 6CU's, 6CV's, 6CW's, 6CX's, 6CY's, 6CZ's, 6DA's, 6DB's, 6DC's, 6DD's, 6DE's, 6DF's, 6DG's, 6DH's, 6DI's, 6DJ's, 6DK's, 6DL's, 6DM's, 6DN's, 6DO's, 6DP's, 6DQ's, 6DR's, 6DS's, 6DT's, 6DU's, 6DV's, 6DW's, 6DX's, 6DY's, 6DZ's, 6EA's, 6EB's, 6EC's, 6ED's, 6EE's, 6EF's, 6EG's, 6EH's, 6EI's, 6EJ's, 6EK's, 6EL's, 6EM's, 6EN's, 6EO's, 6EP's, 6EQ's, 6ER's, 6ES's, 6ET's, 6EU's, 6EV's, 6EW's, 6EX's, 6EY's, 6EZ's, 6FA's, 6FB's, 6FC's, 6FD's, 6FE's, 6FF's, 6FG's, 6FH's, 6FI's, 6FJ's, 6FK's, 6FL's, 6FM's, 6FN's, 6FO's, 6FP's, 6FQ's, 6FR's, 6FS's, 6FT's, 6FU's, 6FV's, 6FW's, 6FX's, 6FY's, 6FZ's, 6GA's, 6GB's, 6GC's, 6GD's, 6GE's, 6GF's, 6GG's, 6GH's, 6GI's, 6GJ's, 6GK's, 6GL's, 6GM's, 6GN's, 6GO's, 6GP's, 6GQ's, 6GR's, 6GS's, 6GT's, 6GU's, 6GV's, 6GW's, 6GX's, 6GY's, 6GZ's, 6HA's, 6HB's, 6HC's, 6HD's, 6HE's, 6HF's, 6HG's, 6HH's, 6HI's, 6HJ's, 6HK's, 6HL's, 6HM's, 6HN's, 6HO's, 6HP's, 6HQ's, 6HR's, 6HS's, 6HT's, 6HU's, 6HV's, 6HW's, 6HX's, 6HY's, 6HZ's, 6IA's, 6IB's, 6IC's, 6ID's, 6IE's, 6IF's, 6IG's, 6IH's, 6II's, 6IJ's, 6IK's, 6IL's, 6IM's, 6IN's, 6IO's, 6IP's, 6IQ's, 6IR's, 6IS's, 6IT's, 6IU's, 6IV's, 6IW's, 6IX's, 6IY's, 6IZ's, 6JA's, 6JB's, 6JC's, 6JD's, 6JE's, 6JF's, 6JG's, 6JH's, 6JI's, 6JJ's, 6JK's, 6JL's, 6JM's, 6JN's, 6JO's, 6JP's, 6JQ's, 6JR's, 6JS's, 6JT's, 6JU's, 6JV's, 6JW's, 6JX's, 6JY's, 6JZ's, 6KA's, 6KB's, 6KC's, 6KD's, 6KE's, 6KF's, 6KG's, 6KH's, 6KI's, 6KJ's, 6KK's, 6KL's, 6KM's, 6KN's, 6KO's, 6KP's, 6KQ's, 6KR's, 6KS's, 6KT's, 6KU's, 6KV's, 6KW's, 6KX's, 6KY's, 6KZ's, 6LA's, 6LB's, 6LC's, 6LD's, 6LE's, 6LF's, 6LG's, 6LH's, 6LI's, 6LJ's, 6LK's, 6LL's, 6LM's, 6LN's, 6LO's, 6LP's, 6LQ's, 6LR's, 6LS's, 6LT's, 6LU's, 6LV's, 6LW's, 6LX's, 6LY's, 6LZ's, 6MA's, 6MB's, 6MC's, 6MD's, 6ME's, 6MF's, 6MG's, 6MH's, 6MI's, 6MJ's, 6MK's, 6ML's, 6MM's, 6MN's, 6MO's, 6MP's, 6MQ's, 6MR's, 6MS's, 6MT's, 6MU's, 6MV's, 6MW's, 6MX's, 6MY's, 6MZ's, 6NA's, 6NB's, 6NC's, 6ND's, 6NE's, 6NF's, 6NG's, 6NH's, 6NI's, 6NJ's, 6NK's, 6NL's, 6NM's, 6NN's, 6NO's, 6NP's, 6NQ's, 6NR's, 6NS's, 6NT's, 6NU's, 6NV's, 6NW's, 6NX's, 6NY's, 6NZ's, 6OA's, 6OB's, 6OC's, 6OD's, 6OE's, 6OF's, 6OG's, 6OH's, 6OI's, 6OJ's, 6OK's, 6OL's, 6OM's, 6ON's, 6OO's, 6OP's, 6OQ's, 6OR's, 6OS's, 6OT's, 6OU's, 6OV's, 6OW's, 6OX's, 6OY's, 6OZ's, 6PA's, 6PB's, 6PC's, 6PD's, 6PE's, 6PF's, 6PG's, 6PH's, 6PI's, 6PJ's, 6PK's, 6PL's, 6PM's, 6PN's, 6PO's, 6PP's, 6PQ's, 6PR's, 6PS's, 6PT's, 6PU's, 6PV's, 6PW's, 6PX's, 6PY's, 6PZ's, 6QA's, 6QB's, 6QC's, 6QD's, 6QE's, 6QF's, 6QG's, 6QH's, 6QI's, 6QJ's, 6QK's, 6QL's, 6QM's, 6QN's, 6QO's, 6QP's, 6QQ's, 6QR's, 6QS's, 6QT's, 6QU's, 6QV's, 6QW's, 6QX's, 6QY's, 6QZ's, 6RA's, 6RB's, 6RC's, 6RD's, 6RE's, 6RF's, 6RG's, 6RH's, 6RI's, 6RJ's, 6RK's, 6RL's, 6RM's, 6RN's, 6RO's, 6RP's, 6RQ's, 6RR's, 6RS's, 6RT's, 6RU's, 6RV's, 6RW's, 6RX's, 6RY's, 6RZ's, 6SA's, 6SB's, 6SC's, 6SD's, 6SE's, 6SF's, 6SG's, 6SH's, 6SI's, 6SJ's, 6SK's, 6SL's, 6SM's, 6SN's, 6SO's, 6SP's, 6SQ's, 6SR's, 6SS's, 6ST's, 6SU's, 6SV's, 6SW's, 6SX's, 6SY's, 6SZ's, 6TA's, 6TB's, 6TC's, 6TD's, 6TE's, 6TF's, 6TG's, 6TH's, 6TI's, 6TJ's, 6TK's, 6TL's, 6TM's, 6TN's, 6TO's, 6TP's, 6TQ's, 6TR's, 6TS's, 6TT's, 6TU's, 6TV's, 6TW's, 6TX's, 6TY's, 6TZ's, 6UA's, 6UB's, 6UC's, 6UD's, 6UE's, 6UF's, 6UG's, 6UH's, 6UI's, 6UJ's, 6UK's, 6UL's, 6UM's, 6UN's, 6UO's, 6UP's, 6UQ's, 6UR's, 6US's, 6UT's, 6UU's, 6UV's, 6UW's, 6UX's, 6UY's, 6UZ's, 6VA's, 6VB's, 6VC's, 6VD's, 6VE's, 6VF's, 6VG's, 6VH's, 6VI's, 6VJ's, 6VK's, 6VL's, 6VM's, 6VN's, 6VO's, 6VP's, 6VQ's, 6VR's, 6VS's, 6VT's, 6VU's, 6VV's, 6VW's, 6VX's, 6VY's, 6VZ's, 6WA's, 6WB's, 6WC's, 6WD's, 6WE's, 6WF's, 6WG's, 6WH's, 6WI's, 6WJ's, 6WK's, 6WL's, 6WM's, 6WN's, 6WO's, 6WP's, 6WQ's, 6WR's, 6WS's, 6WT's, 6WU's, 6WV's, 6WW's, 6WX's, 6WY's, 6WZ's, 6XA's, 6XB's, 6XC's, 6XD's, 6XE's, 6XF's, 6XG's, 6XH's, 6XI's, 6XJ's, 6XK's, 6XL's, 6XM's, 6XN's, 6XO's, 6XP's, 6XQ's, 6XR's, 6XS's, 6XT's, 6XU's, 6XV's, 6XW's, 6XX's, 6XY's, 6XZ's, 6YA's, 6YB's, 6YC's, 6YD's, 6YE's, 6YF's, 6YG's, 6YH's, 6YI's, 6YJ's, 6YK's, 6YL's, 6YM's, 6YN's, 6YO's, 6YP's, 6YQ's, 6YR's, 6YS's, 6YT's, 6YU's, 6YV's, 6YW's, 6YX's, 6YY's, 6YZ's, 6ZA's, 6ZB's, 6ZC's, 6ZD's, 6ZE's, 6ZF's, 6ZG's, 6ZH's, 6ZI's, 6ZJ's, 6ZK's, 6ZL's, 6ZM's, 6ZN's, 6ZO's, 6ZP's, 6ZQ's, 6ZR's, 6ZS's, 6ZT's, 6ZU's, 6ZV's, 6ZW's, 6ZX's, 6ZY's, 6ZZ's, 6AA's, 6AB's, 6AC's, 6AD's, 6AE's, 6AF's, 6AG's, 6AH's, 6AI's, 6AJ's, 6AK's, 6AL's, 6AM's, 6AN's, 6AO's, 6AP's, 6AQ's, 6AR's, 6AS's, 6AT's, 6AU's, 6AV's, 6AW's, 6AX's, 6AY's, 6AZ's, 6BA's, 6BB's, 6BC's, 6BD's, 6BE's, 6BF's, 6BG's, 6BH's, 6BI's, 6BJ's, 6BK's, 6BL's, 6BM's, 6BN's, 6BO's, 6BP's, 6BQ's, 6BR's, 6BS's, 6BT's, 6BU's, 6BV's, 6BW's, 6BX's, 6BY's, 6BZ's, 6CA's, 6CB's, 6CC's, 6CD's, 6CE's, 6CF's, 6CG's, 6CH's, 6CI's, 6CJ's, 6CK's, 6CL's,

The Group visited the P.M.G. monitoring station, VNA, situated just outside Perth. Here the officer-in-charge, ex-RJF, showed us receivers that would make the sideband boys green with envy and that would leave the well known AFDR model for dead. The antenna farm left us speechless and the frequency measuring apparatus again was out of this world.

At Merredin on our re-entry stage, Mal & MU took charge and after seeing the local b.c. station he took all into that wonderful shack the town people built.

Time does not permit mentioning all those whom we met or contacted, but our thanks go to all the VKs and VKS boys who gave us and the VLS boys such a wonderful time, to the VKS boys who kept us posted with news from home, and especially to Dave EDB and Len GIG and Mal SMU who made sure we got home safe and sound. In saying TB and CUAGN you may be sure the Net really means it.

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## HOW CAN THE AMATEUR ASSIST

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"How can we help in this very important

Three problems face the new operator when the brigade decides to form a network. They are: obtain suitable equipment to install and maintain in the vehicle or base station, and in the case of mobile, to silence the vehicle noises. In most cases the equipment will be commercially made. However, some may prefer: disposals gear which is still available in limited supply and will certainly need some modification well within the average Amateur's capabilities.

Some may want home-built, sufficient for the job, but the building or helping to build the outfit. There is too the possibility that a group of Amateurs will form a community project, and it is not forgotten that nearly all the VLM stuff on Project Phoenix was either home-brew or custom-made by Neutronics.

Installation is normally the maker's responsibility but distance, coupled with today's habits of changing the radio, may make this a problem. Radio vehicles can break down at awkward moments, too, which means no radio unless the car is towed to a garage.

Regular checking of the antenna for resonance and the whole outfit for performance is a must. The antenna must be in an efficient network and none at all. First aid to the broken-down set when every minute counts may save many acres and even many

However good the equipment is on the bench, its performance won't be worth tuppence unless the ignition, generator, and other noises from the vehicle are eliminated. This is a recurring problem and careful study of this problem and suitable action, again in the field, will earn handsome dividends.

Finally, recognise these V-z chaps for what they are, expert Bremen and first class operators. Listen to their problems and look for the solution by experiment if no other way. Don't try to teach them operating procedure for their requirements are remote indeed from Amateur procedure and encourage those who would understand the mysteries of radio for they are the future network technicians and a fertile field for recruits to Amateur Radio.

Every Amateur in Project Phoenix started as a smoke-net operator, nearly every one (in VK3 anyway) is an active member of the WLA and the WJCEW.

—ДОН ВКЛАКН

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Price £9/10/0 inc. tax.

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7-pin Miniature Valve Sockets and Shields, New, 15 for £1.  
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A.c. volts 0-10, 50, 100, 500, 1,000  
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Resistance 0-60K ohms 0-6 meg  
Capacity 0-01-0.1  $\mu$ F  
a.c. 1st a.c. 5v, 5,000-1,001  $\mu$ F  
at a.c. 250v.  
Decibel minus 20 db plus 22 db  
Output range 0-10, 50, 100, 500, and 1,000.  
Battery used VV13 1.5, 1 piece  
Dimensions 3 1/4 x 1-1/8 x 1-1/8 in

Complete with internal battery, testing leads and prods.

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### SPECIALS!!

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P.V.C. insulation, 0.028. Red or white. 100 yd. Rolls, 10/- Roll.

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# Trade Review

## NEW B & K. MODEL 1075

### TELEVISION ANALYST

Amalgamated Wireless (Australasia) Ltd. announce an addition to the well known B & K. range of servicing instruments for which they are sole distributors in Australia. The new instrument is known as Model 1075 "Television Analyst".

The "Analyst" is a t.v. signal generating source used for the rapid location of faults in television receivers. An earlier model (Model 1075) is already widely used in television servicing workshops here. The new model possesses all the features of the earlier type, but has an additional integral unit—a circuit analyser, previously supplied as a separate unit. The result is a single, compact unit, convenient in use and easy to carry.

The "Analyst" is a unique system for rapid fault locating. When familiar with the operation of the instrument a skilled serviceman can locate even the most difficult fault—including intermittent—within a few minutes. Valuable servicing time is thereby greatly reduced, since the greater part of servicing time is usually spent in locating the fault.

"Analyst" has a flying-spot scanner to generate a test pattern which is fed to any stage in the receiver. By narrowing down the points of injection a faulty component can be positively located.

The instrument can be used with no t.v. station on the air, thus reducing the great amount of lost workshop time when stations are not broadcasting.

It can be wired into a workshop system to drive a large number of receivers at a time.

The signal can be applied to any stage in the video, audio, i.f., sync. and sweep sections of the set. No external c.r.o. or waveform analyser is needed—the one instrument does the whole job. The instrument costs £170 plus Sales Tax f.o.b./o.r. Australian capital cities.

Further information and photographs (if available) may be obtained from Mr. H. A. Tyrer, Engineering Products Division, Amalgamated Wireless (Australasia) Ltd., postal address: G.P.O. Box 2516, Sydney, or telephone 2-0233, Ext. 348.

### VICEROY S.B. TRANSMITTER

Through the courtesy of R. H. Cunningham Pty. Ltd., "A.R." was able to air-test the K.W. Viceroysideband Transmitter.

This unit is supplied with full operating instructions, schematic circuits and an optional power supply, if required. It is only necessary to add a microphone (a D104 was used for our tests) and a Morse key plus an aerial change-over relay.

The whole unit is well laid out with good front appearance, rigid cabinet and chassis, and all metal parts are cadmium plated and passivated. Adequate ventilation is provided by suitable screened holes. Wiring is neat and cabled with all parts so placed that little service difficulties would be experienced in maintaining this unit.

There is no evidence of poor quality nor underrated components. Overall, it is a well made, carefully laid out piece of commercial gear.

The Viceroys is a crystal filter type of s.b. transmitter using a 435 kc. xtal oscillator, driving a balanced low impedance modulator comprising crystal diodes into which is fed the audio signal. A half lattice filter rejects the unwanted sideband and the requisite sideband is then heterodyned to the required frequency by means of a v.f.o. and suitable crystals.

The transmitter is wired from a rear connector to a small control box, and the power supply contains a voltage change switch mounted on the panel, so that it is necessary that the power supply be adjacent to the transmitter. The control box contains two switches which are frequently used, thus they could possibly be better placed on the transmitter panel; if you use only one band, then this switching is no problem, however it proved awkward during the "A.R." tests.

The v.f.o. is well situated in the transmitter and has a very smooth Eddystone dial, free from backlash and including an auxiliary 0-100 logging scale, with the main Amateur bands, 10-80 metres, calibrated on the main dial face.

Several hours were spent in setting up the transmitter and checking the various tuning controls, VOX, etc. No difficulty arose but the VOX is a little tricky until one becomes initiated. A dummy aerial was used for all these tests.

On-the-air checks were then made using s.b., a.m. and c.w.; broadly speaking, s.b. and c.w. reports were excellent, but a.m. was only fair, but little time was spent in trying a.m. because the Viceroys is a s.b. rig. Operation was had on the 80, 40 and 20 metre bands only as there was no activity at a convenient time on the higher frequency bands. About 35 s.b. contacts were made, mostly with overseas stations and reports of voice quality and v.f.o. stability were good. One comment is made that no sideband selection is available and the Viceroys transmits upper s.b. on all bands except 80 mx, so that on 40 mx one is expected to do the impossible.

Unwanted sideband and carrier suppression reports were quite satisfactory; controls did not need frequent adjustment.

For those who may use this s.b. transmitter for c.w. operation, it can be said that the keying is excellent.

No reports on t.v. would be of value as the rig was tested in an area of very high i.v. field strength, so needless to say no t.v. was experienced.

The unit includes a.l.c. but its effectiveness could only be judged by several local contacts, as no c.r.o. was available at the time.

It is considered that the K.W. Viceroys s.b. transmitter is a well designed and constructed unit, providing quality performance for a very reasonable outlay.

For further information, write to the local representatives, R. H. Cunningham Pty. Ltd., 8 Bromham Place, Richmond, E.I., Victoria, or the Interstate agents.

## GLASS ZENERS IN 400 mW. RATINGS

A brand new line of 400 mW. rated Glass Zener Diodes by International Rectifier Corporation has been announced by Warburton Frankl. These feature low voltage values (3.3 to 12 volts), extremely low dynamic impedance (to a 5 ohms at  $I_z = 20$  mA.) and low temperature co-efficient ( $-0.062$  to  $-0.060$  C.).

Designated types 1N740, 1N750 and 1N750A, the new devices are available in both 5% and 10% voltage tolerance types and meet J.E.D.C. registered values of reverse leakage current measured at 1 volt. The new diodes are process selected to provide exceptionally sharp zener characteristics and high stability and excellent voltage regulation is assured over the temperature range from  $-55^{\circ}\text{C.}$  to  $+150^{\circ}\text{C.}$  Extremely small size ( $0.265 \times 0.110$  diameter) and glass-to-metal hermetic sealing insure a rugged unit capable of long-term reliability.

Full details are available from Warburton Frankl's offices in Brisbane, Sydney, Melbourne and Adelaide.

Warburton Frankl also recently introduced 28 subminiature glass zener types rated at 250 mW. in the 3.3-30 volt range.

## Book Review

### SILICON RECTIFIER

#### HANDBOOK

By Sarkes-Tarzian Inc.

A handy volume which will give either old or new Hams an insight into the operation of semi conductor rectifiers.

There chapters on theory, manufacturing methods, rectifier characteristics, typical rectifier circuits, test circuits, rectifier and filter circuit design, and application techniques.

In addition there is a catalogue section showing characteristics of most of the current range of Sarkes-Tarzian silicon rectifiers.

This book costs only 9/- plus 1/- postage and if it only saves you one 400 p.w. rectifier it will have paid for itself.

Our copy from McGills Newsagency, 183-5 Elizabeth Street, Melbourne.

### ELECTRONIC TIPS AND TIMESAVERS

By John A. Constable

Packed full of ingenious, money-saving ideas, this is one of those easily read books which can save you many pounds and valuable hours during your experimenting.

Price 16/- plus 1/- postage. Our copy from McGills Newsagency, 183-5 Elizabeth Street, Melbourne.

### SCHOLARS TAKE PART IN QSOs

Benalla High School (Vic.) students took part in a radio broadcast as part of Education Week in New South Wales in August.

Throughout N.S.W. school boys spoke to each other over radio stations and Benalla was active from Victoria. This was arranged following a discussion between Ken BKR of Benalla and a teacher at Louisa's Jetty, near Newcastle.

Members of the Benalla High School Radio Club were active on the medium and Rotary Exchange student, Billy Ellen Rosa, from America, spoke to the other schools over the air. Radio Club members, Frank Drail and Peter Amor, assisted with the radio side of the contact.

"Benalla Standard," 14/3/61.

# Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

## GENTLEMEN'S AGREEMENT

Editor 'A.R.' Dear Sir,

Continuation of the so-called Gentlemen's Agreement in allowing c.w. the lower 50 kc of the 7 and 3.5 Mc band as advocated under the Federal Executive notes in August issue of 'A.R.' does not really represent the views of members, but a minute section who demand exclusive territory for their out-moded form of communication—c.w.

That the Federal Executive should back this minority against the majority is quite beyond human understanding. Research undertaken for the undersigned by a top Australian market research executive (and reported in these columns some few months back) proved beyond all doubt that there was hardly any c.w. activity which was in marked contrast to phone, especially a.s.b.

Whilst appreciating there will be more activity on the lower frequency bands as the sunspot minima approaches, this means that more and more a.s.b. and a.m. phone will be moving to these bands and naturally will want more demand more room. My advice to them is ignore these so-called 'gentlemen's agreements' and operate where and when it suits them.

Instead of dictating policy through notes in 'A.R.' the Federal Executive (if it has any democratic spirit left in it) would be far better seeking the opinion of the members than trying to perpetuate an agreement which, to most, never existed. May I suggest to all that instead of sitting back and following a suggestion by F.E. that members through their own divisions urge a postal vote as to whether or not there should be a party to these 'gentlemen's agreements'. To cut down expense for another inevitable debacle of the future, perhaps a second question might be included: 'Are you in favour of the abolition of c.w.'? The answers to the latter, like the former, would be quite startling.

—Roth Jones, VK3DG.

## SHORT WAVE LISTENING

Editor 'A.R.' Dear Sir,

When I first started a.w.l'ing a little over 12 months ago there were quite a few things that I wished to know as the right methods could be adopted. Information at that time was not to be obtained locally so I decided to pen my queries to the scribe of the a.w.l page in 'A.R.' with the stippling rule of the right procedure necessary for the hobby. Since then I have written once a month, many times we don't agree on certain things. My cards, for instance, he said they were lousy. Well, that's OK by me. I thought they were good as it would not do for us to all have the same type of cards. Such comments create new ideas and another person can see your errors better than you can yourself.

Maurie is straight in the point, has helped me no end, and no doubt that applies not only to myself but many s.w.l's who write to him from time to time. I look forward to that page in 'A.R.' each month with interest, and think that he has done an excellent job in keeping H intact. So keep up the good work O.M., as I feel sure that all s.w.l's in VK land appreciate that you are doing for them.

—Chas Abernathy, W1A-1221

## R.D. CONTENT OPERATING

Editor 'A.R.' Dear Sir,

I have just submitted my log for the 1961 R.D. Contest. As usual I did enjoy the Contest, however I do feel that it was marred by several really atrocious signals from all parts of VK.

It is inevitable in a contest of this nature that some signals will be poor. There are several reasons for this state of affairs:

- (a) Something has 'popped up' in the gear or got out of adjustment during the contest unknown to the operator.
- (b) Chaps come on for about the only time they put in on the air from year to year without bothering to check out the rig beforehand for any bugs and correct operation.
- (c) Some try to get more out of the gear for contest purposes than they would normally, resulting in incorrect loading, improper matching, etc.
- (d) Some just plain overmodulate to attract attention and presumably more contacts.

My comments on these four categories are:

- (a) Tell the chap when you work him that there's something wrong with his signal. If

he's any sort of a bloke he'll take it the right way, and act on it.

(b) It's nice to see these chaps come on the air. I really think they are in the minority as offenders and we probably just have to tolerate them.

(c) These fellows can be helped by teaching them that a clean, from modulated signal, even though lower powered, is more effective than a poor higher powered signal. Those who can could well assist in providing technical information and practical help to aid in getting the offending equipment operating correctly. I might add that I have received much of this from the boys and girls occupying the air around Elizabeth, namely VK5DY and VK5NO.

(d) These are the kind we don't want on the band, and they're leaving behind them selfish and as such very hard to counter or reason with. Perhaps they could be penalised by disqualification upon report of monitoring stations appointed by the Advisory Committee in each State.

Lastly, but not least, I must comment upon the subject of operating courtesy. By and large, in a contest of this nature, it is impossible not to QRM other stations from time to time, but this business of sitting on a frequency, calling, and then occupying the air, other station obviously being heard by the offender trying to swap numbers and after having spoiled this attempt, going ahead and exchanging numbers with the station you just lost for him, really gets my goat. Fortunately there only appear to be several of these types in each State, but we can do without them too.

Here in Elizabeth we have one of the highest densities of stations for a given area but we all seem to get on quite well with each other. Look at last year's scores. At least the Elizabeth stations were amongst the State's highest scores.

Who can't other fellows do likewise as far as transmissions and courtesy are concerned? They will find they get just as much, if not more fun out of their hobby.

In Elizabeth we just can't afford to have stations with poor transmissions. Isn't the boat on the same foot elsewhere?

Thanks to all good operators who exchanged numbers with me. To the bad ones with incoherent transmissions, the terrors of the Wouff Hong.

—Ian J. Hunt, VK5GX.

## LIMITED LICENSEES

Editor 'A.R.' Dear Sir,

As a comparative newcomer I do more listening than talking (I hope), and a few of the old hands seem to think that one of the reasons the lower frequency bands still have room is because the Z calls are lazy. Yes 'lazy' is the word used by them.

Most of our Z calls are young chaps who have the ability to obtain their full license. But why don't they obtain it? Once they get on the air so many seem content to stay a Z. What a boost they could give to the lower frequencies.

Perhaps the young chaps haven't the oanh! It is more fun? I don't know the reason for starting with a limited license. It has been suggested to me that the limited license be made current for one year only to ensure that the full license is taken up.

What do other think?

—Peter W. Brown, VK4PJ

# TEST EQUIPMENT

Famous E.I.C.O. brand Kits now available in Australia

**G.D.O.** This is a piece of equipment that should be in every shack. The multitude of uses to which it can be put are too numerous to print. Ask the chap who has one, he will tell you he wouldn't be without one. Take the guesswork out of the gear you build and save yourself time. The E.I.C.O. G.D.O. has a frequency range of 400 Kc. to 250 Mc. in eight factory-wound coils which are wound to 0.5% accuracy on polystyrene formers. Variable sensitivity control. 500  $\mu$ A. meter and phone jack for listening to zero beat. 240-volt operation. £27/10/0 including sales tax.

**V.T.V.M.** Peak-to-Peak V.T.V.M. with a large 7½" meter. ONE probe handles D.C., A.C. and Ohms Measures directly P-P. voltages of complex and sine waves, 0-4, 14, 42, 140, 420, 1,400, and 4,200 volts. D.C./R.M.S. sine volts 0-1.5, 5, 15, 50, 150, 500 and 1,500 volts. Ohms 0-100 Megs in seven ranges. 240-volt operation. £31/7/6 including sales tax.

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- 1,000 Kc.—Accuracy 0.005%—£6/0/0 plus sales tax.
- 1,500 Kc.—Accuracy 0.01%—£4/16/0 plus sales tax.
- 3,500 Kc.—Accuracy 0.005%—£3/18/0 plus sales tax.

All goods despatched Free of Charge by Registered Post. Be sure to include your full address and Money Order or Cheque with your order.

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A good knowledge of import procedures would be an advantage, but not a necessity.

Write for information to the Hallcrafters' representative:

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227 Victoria Road, Rydalmere, N.S.W.



# SIDEBA

**Bad Pounsett, VK2AQJ**  
6 Albre Street,  
Queanbeyan, N.S.W.

## SINGLE SIDEBAID 40 YEARS AGO

We hear a lot of comment on the bands and in various journals about this "new" technique Single Sideband. In Australia, s.s.b. might be called new to the Amateur bands if something that goes back over a decade can be termed "new".

A little research into the history of s.s.b. brought to light some very interesting facts. The man to whom the credit of discovering the possibilities of single sideband must go, is John K. Carson, of the U.S.A., who submitted a paper as early as 1915 advancing the idea of transmitting only one sideband. The comparison of an amplitude modulated signal had been established mathematically about a year earlier in 1914. That is, that it consisted of a carrier plus two identical sidebands.

However, as is often the case, the theory was established, but the practical use of the art was not sufficiently advanced to bring a single sideband system into being. At this time (1915) the United States Navy was conducting research into s.s.b. transmission and it is interesting to note that a form of s.s.b. was obtained by detuning the antenna system. The very low frequency used made it possible to detune the antenna sufficiently to pass one sideband well and attenuate the other. This was carried out at the maximum U.S. radio station, NAA, at Arlington, Virginia.

Experimental work was carried out in 1923 in trans-Atlantic communication using s.s.b. with a pilot carrier on a frequency of 87 kc. These experiments culminated in the trans-Atlantic public radio-telephone using s.s.b. in 1927. By 1938 s.s.b. had come to be generally used on all overseas radio-telephone circuits and was made of the high frequency spectrum independent sideband and multiplexing was further developed until today a very high standard of communication has been reached.

### But what of Amateur participation?

As early as 1933 Robert Moore, WDEI, built one operated on s.s.b. transmitter in the Amateur bands and in 1934, half a dozen Amateurs in the U.S.A. were using single sideband. However, progress was slow and it was not until after World War II, that the pace began to quicken. Today we are well aware of the fact that sideband has arrived to stay. In fact it took advantage of all that it has to offer.

### VK2ON TRANSMITTER (Part 5)

The first linear stage (there are three of them) uses a 6AG7 in Class AB<sub>1</sub>. Plenty of output is obtained to drive an EL34 g.p. which excites a 500 k.c. As there is main to spare, a volume control is used in the form of variable bias to the 6AG7. This varies from 3-13 volts. A voltmeter applied to the test point (see Fig. 1) tells when cut-off is being approached. Top high a bias would bring distortion. Reducing the gain here covers spurious responses and undesired carrier level. The gain can be advanced to compensate for losses on the higher frequency bands.

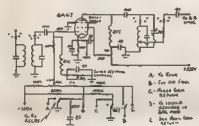
The extra netting control is used when the netting signal is not sufficient. It could be combined with the netting switch at control. A shield across the bottom of the 6AG7 socket is necessary. The 0.01  $\mu$ F. by-passing disc capacitors are connected by very short leads to the socket pins. The tuned circuits have about 120 pF total capacity for 80 metres, 75 pF for 40, 35 pF for 20, and 20 pF for 15 and 10 metres. The cathode tap of the following grounded grid EL34 valve is carefully adjusted on each coil.

A small variation here can alter the power transfer greatly. The tap is placed between 10 and 20 per cent of total turns and from earth end. The 0.01  $\mu$ F. output condenser is only to isolate a germanium diode metering circuit in the next chassis. Such an i.f. indicator could be placed in the exciter chassis, of course. The band switches are all ganged although shown separate on the diagram.

Class AB<sub>1</sub> operation is used to obtain more output, up to 5-10 watts if required. Only 1 watt is needed, however, to drive the EL34.

The screen voltage exceeds 150 volts, the rated maximum, but the 6AG7 does not appear to mind this. The 100 $\Omega$  exciter has a similar circuit and 300 volts is used so it is amazing what the tube will stand. Grid operation, a plate voltage of 500 does no harm.

The following two linear stages are housed in a separate box, a BC375 chassis, and it is hoped to describe these in next month's issue.



VK2ON's First Linear Amplifier.

### HEARD

Recently there has been mention made in various overseas journals of this "Break-Break" that is common in sideband circles. Listening around the band I have heard a few caustic comments on this often rude procedure. How often have you been having a pleasant and interesting contact and had it broken up by a third station? How often have you yourself been gullied? I think we all have at some time.

I do not advocate banning breaking-in, but I think a few simple rules could be applied. Firstly, ask yourself if you have anything to contribute to the conversation. This means listening for several minutes. This will give you a picture of who is in the net if there are more than two stations involved. It will also tell you what other the net is in, and this is important so that you know whose turn it is, when you pass it on.

When joining a net do not monopolize the conversation with one station and leave the other chap or chap out in the cold. This adds up to rather bad manners. Do not try to join a net in the middle of a point or explanation that one of the participants is making, this is rude and interrupts the net. Most annoying to all concerned. The time to join, is when station identifications are being given and then the announcement of your own call sign will be sufficient indication that you are ON frequency. This leads to another point, please be ON frequency. One of the joys of sideband operation is VOX, so let us use it intelligently and properly.

### THE LATEST FROM DRAKE

No doubt you have heard of the Drake 1A and 2A receivers. Some fortunate Amateurs in Australia have one in their shacks but for most of us these receivers are usually at the other end of the contact across the Pacific Ocean.

The R. L. Drake Company of Miamisburg, Ohio, have produced another model, this time the 2B receiver. The 2B has five Amateur bands, 20 to 10 metres as standard equipment plus two additional ranges in the 10 metre band and five other bands of your choice, anywhere from 15 to 30 Mc., as accessories. Each band is 600 kc. wide.

This receiver is of triple conversion design having the first i.f. variable from 3.5 to 4.1 Mc. and a second i.f. at 90 Kc. The first oscillator is crystal controlled, which gives excellent stability. In fact stability is of a very high order in all of Drake's designs.

The front end of this receiver is very interesting. The tubes used are a 6322 r.t. amplifier and a 628 as mixer and crystal oscillator. The antenna and mixer coils are tuned by a variable capacitor coming out to the front panel and independent of the main tuning dial. This circuit requires peaking from band to band but is much superior to broad-band tuning. Home brew receiver builders could take a leaf out of Drake's book in this respect. The calibration of the tuning dial allows frequencies to be read to approximately 1 Kc.

The 50 Kc. 1 $\frac{1}{2}$  amplifier has three different switchable bandwidths—0.5 Kc., 1 Kc. and 3.5 Kc. with band pass tuning. A product or diode detector is available. The Drake 2B is attractive physically, being very compact with measurements of 15 in. wide, 9 in. high and 9 in. deep.

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**TYPE PT1876.**—Primary 230 or 240 volts to high, medium or low taps (Overwound primary) Suitable for switching with non-shorting contacts.

Secondary 1, 850, 750 or 600 volts per side of c.t., depending on primary tap selected. D.C. load current 200 mA. continuous or 250 mA. part intermittent with choke input filter.

Secondary 2 45 to 6 volts at 0.3 amp. for pilot lamp. For use with 5R4GY rectifier, choke input filter.

**TYPE PT1400.**—Primary 200, 220, 230, 240 volts.

Secondary: 565, 500, 425 volts per side of c.t., 250 mA. condenser input filter.

Filaments: 2 x 6.3v. (3a.), 2 x 2.5v. (3a.), 5v (3a) Horizontal mounting.

**TYPE PT1311.**—Primary 200, 220, 230, 240 volts

Secondary: 1000, 850, 750, 600, 500 volts per side of c.t. 300-400 mA. choke input filter

**TYPE PT1305.**—Primary 200, 220, 230, 240 volts.

Secondary: 25v. c.t. 10a. for 2 x 866/A fls. Max.; D.C. wkg. 3000 volts.

**TYPE PT1516.**—5 v. at 3 a., 1000 v. D.C. working For use with n.t. power supply and high-level negative peak clipper filament voltage

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**TYPE Z3044.**—12 Henrys 200 mA. D.C. resistance = 165 ohms.

**TYPE Z3045.**—10 Henrys 250 mA. D.C. resistance = 130 ohms.

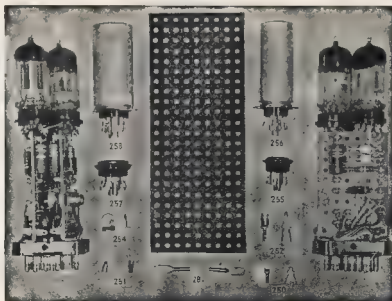
**TYPE Z3046.**—10 Henrys 300 mA. D.C. resistance = 80 ohms

**TYPE Z3047.** 5-15 Henrys 250-50 mA. DC resistance . 70 ohms

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# 

**David Tanner, VK3AAU**  
17 Wolsley Street,  
Mont Albert, Vic.

Apparently things on the v.h.f. scene have been somewhat lull since last month, as I have very little news to offer. This may be because I left for some holidays the day after the deadline. My apologies to those who sent news which was too late for me to include.

As promised last month, I have a list of achievements for 8 mhz. The first column is the number of call areas worked. For example, VK2, VK3, VK4, etc., all count as different call areas. The W.A.S. and A.J.D. are not necessarily confirmed. Once again please send me any omissions or errors.

VK3AW	20	A.J.D.
VK3DQ	8	
VK3AK	18	A.J.D.
VK3AT	8	
VK3CQ	3	
VK3EK	14	W.A.S.
VK3FG	3	
VK3SO	28	A.J.D., VR3
VK3ZF	6	W.A.S.
VK3W	14	
VK3ZB	21	A.J.D., W.A.S.
VK3ZC	21	A.J.D., W.A.S., KH8
VK3ZD	22	A.J.D., W.A.S., KH8, VR3
VK3ZK	21	A.J.D., W.A.S.
VK3LE	14	
VK3AL	21	XE
VK3AT	18	KH6
VK3AAU	21	KH8

That is all we have at the moment, but you can now see the sort of information we are after.

Here is some news from South Australia by courtesy of AJ 3ZCR. 8 mhz was open to VK3 on Sept. 1 during the day, but no contacts were made. Once again the elusive 8 mhz was heard. This coincides with the 27-day period from the previous opening.

Every time 3ZCR was on the air on 144 Mc. over a distance of about 180 miles. I believe they have also done it on 50 Mc. too. Mick is further from the Lofly Banges than anyone else. Al complains that although he himself runs 417As and 1.800 cycle band-pass rx, he can only hear a quarter of the signals that Mick hears. Al is looking for a bigger bottle to replace the 8/40. (I believe there is now a 7/50 on the market.)

John ex-3ZDL is now back in VK3 after a period in Darwin working many J.A.s. Eric 3ZCA is having success with a transistorised 50 Mc. converter for mobile, using OC10 and C111 transistors.

It is very pleasing to note that v.h.f. activity is very much on the improve in VK3. What with the appearance of some new stations and many of the older ones firing up their rigs, signals can be heard on 6 and 3 mhz more often. Keep it up chaps and twist a few more areas into sticking up their rigs.

Lance 3ZBK has shifted his QTH again and has lost the advantage of the height of the hills, but we are pleased to see you and Hazel move into your new home. Bob 6BE has just moved into his new home and should soon be back on the air with his 432Fs glowing that lovely colour again. What a bloke! Alvin 3ZGA back into the fold of VK3 having been transferred over here. Should have some activity stirred up by his presence.

On Friday, 4th August, the Brisbane V.h.f. Group, who seem a pretty live-wire crowd, held a 3 x 8 hunt from Kangaroo Point at 8 p.m. The 3 x 8 was located at Moorooka on a tree-clad hill between Rocklea and Moorooka, and access was complicated by a couple parked their 3 x 8s in the back of the truck.

Apparently there were no spoil areas and everyone got by as best they could.

The hunt was organised by 4ZAG and 4ZNS, and among the 3 x 8 operators and navigators were 4ZAX, 4ZBZ, 4ZAA, 4ZDZ, 4ZDA, 4ZDK, 4ZAG and 4ZDG. Hope I've not missed anyone. 4JO was hampered with car trouble. The evening terminated at the QTH of 4ZNS for tea.

Five 50 Mc mobiles, 4ZAX, 4ZBH, 4ZBL, 4ZBN and 4ZCE entered in the 3 x 8 on Tamborine Mountain and Deadesend on Sunday, 8th August. A ton of fun was had by all, the highlight of the day being the 40-mile mobile chase with 4ZBN, 4ZAX and 4ZCT on Mt. Glorious with 3 x 8 signals both ways.

The group separated for home after a barbecue at "Leone Bridge" on the Boulders Road.

The last meeting of the West Australian V.h.f. Group was well attended and quite lengthy discussions on some matters resulted. We were favoured by a film on our evening which was particularly vivid. Roy 6RY dished out a cup of coffee.

Remember the next VK6 V.h.f. Group meeting will be on Monday, 23rd Oct., and will be held in the Amenities Room at D.C.A. workshops, Guildford Road, Mt. Lawley. Interstate visitors are particularly welcome.

DX on 50 Mc. seems as though it is just around the corner. ILKA has been heard on quite a number of occasions and also those strange signals which are emitted from the Marian Islands.

We must welcome John 4ZAG and Vic 6ZCM to this band. John has been battling with his

4Z27 for quite a while now, but is able to report that he can now reach the island around his final tank. Vic only received his call sign very recently and was on the air the same night. However, his signal employing frequency modulation was a problem to many.

Regular stations on 80 Mc are 6ZCK, 6ZDS, 6BV, 6BK, 6ZCE, 6ZCW, 6ZAW, 6VK, 6DI, 6ZAA, 6ZGA, 6ZDS, 6ZAG.

Very pleased to hear you on v.h.f. Phil 6ZAW and what about yours, Peter 6ZDR? I believe you only want a few hours to do the job.

144 Mc. is coming to life more now, but still has a long way to go. The last fox hunt was organised by Alvin 3ZGA assisted by Len 6ZCS and was located on Green-Mount Hill.

That's all for this time chaps, next month should be back to normal again we hope. TS, 3AAU.

## 

Listed below is the complete membership. Asterisk denotes members whose credits have been increased by the submission of additional confirmations since 1/9/60. The first column after the call sign denotes the certificate number and the next the number of countries confirmed.

### 

*VK3RU	2 256	*VK3TP	48 119
*VK3AB	45 256	*VK3UF	8 116
*VK3AM	43 249	*VK3UL	39 115
*VK3AH	50 256	*VK3AX	53 112
*VK3AP	41 241	*VK3BW	39 111
*VK3WL	14 211	*VK3MS	34 109
*VK3KW	4 206	*VK3CB	38 108
*VK3AT	26 204	*VK3WE	34 107
*VK3ER	13 182	*VK3EL	44 108
*VK3RW	33 184	*VK3TK	28 107
*VK3SE	5 178	*VK3AL	33 107
*VK3GB	50 171	*VK3AC	30 105
*VK3EE	10 163	*VK3AU	40 104
*VK3DB	31 161	*VK3HO	30 103
*VK3WF	16 160	*VK3AD	46 103
*VK3DO	30 166	*VK3ADT	13 102
*VK3JD	1 156	*VK3AHA	10 102
*VK3ZB	14 144	*VK3AR	9 101
*VK3LN	11 141	*VK3CE	34 101
*VK3JE	7 140	*VK3IG	9 100
*VK3AH	4 138	*VK3KG	37 100
*VK3ZC	4 136	*VK3LC	27 100
*VK3XN	43 138	*VK3JG	20 100
*VK3RT	28 134	*VK3JG	33 100
*VK3ZD	17 132	*VK3AG	17 100
*VK3ACN	39 130	*VK3ACU	40 100
*VK3TE	37 115		

### 

*VK3KB	10 282	*VK3FH	31 134
*VK3CK	26 282	*VK3AWP	69 133
*VK3EF	29 284	*VK3JT	25 131
*VK3NC	19 245	*VK3AH	62 130
*VK3FH	15 226	*VK3OU	64 129
*VK3BE	8 222	*VK3RP	34 129
*VK3HR	6 218	*VK3RT	11 125
*VK3BU	16 216	*VK3ST	37 122
*VK3XU	46 213	*VK3YD	17 122
*VK3TL	17 212	*VK3EK	3 122
*VK3ZV	18 209	*VK3H	12 120
*VK3XK	41 204	*VK3AX	68 119
*VK3BY	45 202	*VK3PL	38 117
*VK3RX	23 198	*VK3KG	40 117
*VK3ZG	16 193	*VK3AG	44 115
*VK3DO	20 191	*VK3TL	24 114
*VK3EL	9 175	*VK3DA	7 113
*VK3AS	22 172	*VK3H	10 108
*VK3SO	33 171	*VK3KU	63 108
*VK3BJ	43 171	*VK3JP	70 105
*VK3XN	43 168	*VK3AG	15 101
*VK3CN	47 163	*VK3KEZ	25 105
*VK3RW	49 162	*VK3CH	55 105
*VK3ARX	66 153	*VK3ARV	58 104
*VK3ZV	16 151		
*VK3SA	28 150	*VK3NS	67 104
*VK3JE	21 146	*VK3VC	54 103
*VK3GL	26 145		
*VK3OW	58 146	*VK3PG	46 102
*VK3ST	64 144	*VK3AIR	89 102
*VK3VW	4 143	*VK3OA	33 101
*VK3OL	4 141	*VK3AP	14 101
*VK3DQ	30 138	*VK3ZA	57 101
*VK3XK	61 136	*VK3TR	22 100
*VK3ZD	65 136	*VK3AM	50 100

## 

In Diagram 3 of the Narrow Band P.M. article in September "A.R." C11 is shown twice. Please delete one of the C11 by-passes.

## 

*VK3ACK	8 289	*VK4BG	65 130
*VK3RU	8 271	*VK3AHA	9 128
*VK3FJ	38 267	*VK3VQ	46 127
*VK3GX	74 263	*VK3B	44 126
*VK3NC	77 260	*VK3PO	47 124
*VK3RG	3 238	*VK3YS	57 121
*VK3ZB	8 235	*VK3ALC	85 121
*VK3ZE	4 231	*VK3CC	63 117
*VK3IHO	78 230	*VK3ASW	53 116
*VK3ZJ	45 229	*VK3NO	58 116
*VK3ZK	43 229	*VK3HO	44 115
*VK3ZL	33 223	*VK3ADT	14 113
*VK3KU	81 221	*VK3TR	80 113
*VK3DO	10 207	*VK3ZB	54 112
*VK3E	12 210	*VK3MM	40 111
*VK3ATN	89 210	*VK3RC	21 110
*VK3DO	10 207	*VK3ZB	54 110
*VK3NS	10 195	*VK3ZC	28 108
*VK3RW	53 191	*VK3KR	58 107
*VK3DB	59 182	*VK3AH	64 107
*VK3EL	10 173	*VK3ARV	10 107
*VK3AHH	73 173	*VK3YL	11 100
*VK3DI	2 170	*VK3AWN	36 105
*VK3CK	30 167	*VK3WT	58 105
*VK3KS	24 167	*VK3VN	10 104
*VK3WF	40 163	*VK3UL	27 104
*VK3HL	75 160	*VK3FP	18 103
*VK3AR	58 159	*VK3ZB	72 104
*VK3JT	83 160	*VK3HZ	17 103
*VK3GW	48 148	*VK3KB	30 103
*VK3ZB	70 140	*VK3ZB	58 101
*VK3LN	29 144	*VK3ZA	65 103
*VK3PL	36 143	*VK3TR	30 102
*VK3YD	41 141	*VK3ARV	71 102
*VK3MC	5 135	*VK3ZFA	70 102
*VK3ZPK	82 138	*VK3BG	80 102
*VK3AP	19 137	*VK3NG	81 102
*VK3H	42 137	*VK3MI	51 101
*VK3DD	22 135	*VK3TG	39 100
*VK3ADE	22 132	*VK3IG	67 100
*VK3AJ	33 131		

It will be seen that during the past year additional submissions for D.K.C.C. credit have been received from individual stations as follows: Vic. 18, N.S.W. 6, Qld 5, S.A. 3, W.A. 3, Tas. 1, N.G. 1.

Members and intending members need have no qualms about the safe transit of cards if they are carefully packed and addressed on the forward journey. They may be forwarded direct to the Awards Manager and registration fee (2/-) included for return if desired.

ALF KISSICK, VK3KR,  
Awards Manager,  
1 Moorland St., Brunswick, N.10, Vic.

## 

Call	Cor. Add.	Call	Cor. Add.
	Nr. Cntr.		Nr. Cntr.
VK3WJ	13 4	VK3DW	8 1
VK3ZFP	28 4	VK3RR	7 1
VK3HR	4 3	VK3HT	6 1
VK3ZB	8 3	VK3ZBZ	10 1
VK3IAC	8 3	VK3ZA	11 1
VK3VW	8 3	VK3GM	12 1
VK3GG	19 3	VK3ACL	14 1
VK3ZK	20 3	VK3ZB	15 1
VK3ZBL	21 3	VK3HO	17 1
VK3RY	2 2	VK3ZBA	18 1
VK3LC	1 1	VK3H	19 1







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We've been very busy sending out catalogues for our new range of Amateur Transmitters and Kits, and consider the response to be very encouraging.

Further to this, we'd like you to note that everyone who has received a catalogue is on the mailing list for additions, and alterations, and will receive these as a matter of course.

Now to business: here is a price list for some of our present range of equipment:

- TX150 Transmitter Kit £60/4/6
- As above, less VFO ..... £49/8/6
- TX75A Transmitter Kit £51/3/9
- As above, less VFO ..... £40/7/9
- TX75B Transmitter Kit £53/8/9
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We would like to draw members' attention to the fact that VKC 2 A.W. Disposal Committee at the time of joining the Division, unless a covering letter requesting a number is included with the application.

Next month we hope to devote this space to details of members' gear and activities, if such information is forthcoming from you please—Doug L2E15.

### BOORAGUI HIGH SCHOOL RADIO CLUB

Good news first, Ian Forrest, a senior member of our club, has received his call sign 2AJF. I know he would appreciate a call, so if you hear him please give him a shout.

On Friday, 11th August, Bob HIN organised an Education Week where the school station and several others took part. Those in the net were from Queensland, Victoria and the capital Territory as well as N.S.W. We were fortunate that conditions were good and we all had a good time. Sue Saunders and Ian McKinnon represented Booragui and the radio club members did the "studio" management.

The club has been promised some more equipment by the W.A. Disposal Committee and you may be sure that it will be put to good use. 71, Bruce, for 2ATZ.

### ALBURY RADIO CLUB

Recently the club took in several new members, all of whom are exhibiting keen interest in radio activities. On June 9 the W.A. Correspondence Course was begun under the tutelage of Don 3BS, and the club hopes to prepare these fellows for their licence by early 1962. More practice is also available to them each night.

Meetings of the club are at present being held at Don's house, and the club members are frequently made on meeting nights.

Geoff Amy recently received news of passing the examination for his Limited Licence, but no call sign, allocated as yet. At the present time Geoff is busily engaged building his rx. The office-bearers of the club are: President, Herb 9QD; Secretary, Don 3BS; Treasurer, Alf Bullock.

## VICTORIA

Because the Radio Theatre is not available during term vacations, the September meeting was held a week earlier than usual. Perhaps this may be the poor attendance, however, those who did come heard a very informative lecture by Jack 3VZ on the art, science and trickery of 30 mc tx. After covering the technical and practical aspects of loop construction, sense induction, "inifiers" and rx requirements, Jack, with the assistance of the other business present, reminiscenced about some of the outstanding hunts of recent years. There was the baby in the pram, the head in the tower near Wandrangy Race, and many others culminating in the microwave tx to windle perpetrated by the lecturer himself at the last outing.

Pieces of equipment on display were described by their proud owners. David 3ADW, Al 3IE, Michael 3ZCZ, Michael 3ZB0, Keith 3Q and Jack himself. Syd 3ASC drew maps with unsuspected skill. Judging by the questions asked and the notes taken, there will be some new starters in future. Jack pointed out that this sport does not require a licence except for the one who hides the tx, therefore associate members may take part. It is not surprising that the 30 mc tx, such as a converter for the car radio, or a Command rx and the normal amount of Ham ingenuity, you can enjoy with a phase of Amateur Radio which is quite different from the usual activities and take the family for a social outing as well. This talk was interesting and not a little amusing. Thanks Jack and all who helped.

The President welcomed Rolf Hagghelm, an ex-OH who is now living at Altona and operates mainly on 7 Mc. c.w with the call 3AOF. At the next meeting on the first Wednesday in October, Geoff 3AM will give a talk on the intriguing topic "The Other Side of Photography." He will also screen two films, one concerning the use of high speed photography to study rapid movement, such as relay contact bounce and picture tube implosions, and the other about lens manufacture. Many Amateurs are also involved in photography, and these days so come along to the Radio Theatre, Royal Melbourne Institute of Technology to hear George's lecture. It will be good—JAEZ.

### SOUTH WESTERN ZONE

Conditions have been in and out of the last few weeks; having received no notes, the damage recorded is only local. One strong signal heard on 7 Mc. band signing 3NA in

GSO with 3PX, also heard Dr. later giving the c.w. and not so long ago Dr. was selling me he was too busy—things must be easing up a bit. John 2AGD and Kevin 3AXR have been over to VK6 for a conference on Bush Fire Radio. They had positions but have not heard how they went.

This looks like stealing David's thunder, but comes from somebody who has stated to be in the scramble come on at 1945 and disappear at 2015. It sounds as if the Iron Curtain rises at 1945 and comes down as soon as the scramble is over. The older chaps know it is done. SUT, the but before and after silence reigns supreme and how!

is very lively here with two new stations on the band—Wally SUT and Lindsay 3ZKL, a new Ham. Welcome to the ranks Lindsay, your modulation really shows some of the older chaps know it is done. SUT, the triode king, after telling us all about the wasted power by using screens in a tube, tells all and sundry it is achieved. TCS at the final, running 10 watts, as the final in the 6 mc rx. Wally, what a waste of power, why not try a 11B1 and leave the wasteful tube to the no-hoper.

Comrats, go to Bill 3ZFG who will have lost the Z with a brand new call he is waiting for T.V. just about complete and here with the 2 mc rx, 60w, get that 8 Mc. rock on the fundamental and make it overtones—easy when you know how. I want now is a few beams south west—71, SANG.

### MOORABBIN AND DISTRICT RADIO CLUB

Since last writing notes for the A.S. final arrangements have been made for the club to operate portable under their call sign of 3AOP/P on the week-end of October 31 and 22 at Clifford Park, near Croydon, Vic. in connection with the Scouts Jamboree on-the-Air.

20, 40 and 80 mc as well as 2 mc operation will be attempted and we would be very pleased to have as many amateurs as possible throughout Australia to contact us. The week-end, Twenty and 80 mc will be operated back to back in a marquee near the scene of most of the Scout activities, and will be manned by Bob 3NZ, Arthur 3AWO, Ken 3ACS and other members. Forty and 2 mc operation is envisaged in a high hall, near the grounds where the arch was erected for the late World Jamboree a little further away from general activities, and will be manned for 20, 40 and 80 mc by a number of the other members. It will be interesting to see how we get out on 2 mc and I must urge the Scouts to point to the Scoutmaster's office towards Croydon. Operation will commence on Saturday morning and go through until Sunday afternoon, that is, Sat. Oct. 31 and Sunday Oct. 1.

As well as the Jamboree on-the-Air, this gathering at Clifford Park, where there will be 800 Scouts and Scout leaders, is designated "The Melbourne Gathering" and is a yearly affair. The Scouts compete among themselves and are taught many interesting Scoutish phenomena such as climbing, rock climbing, first aid, and this year a special obstacle event is being staged. Look out for 3AOP/portable boys! 71, 3LC.

## QUEENSLAND

How did you get on in the R.D. Contest? I hope you forwarded your qualifying log to do the right thing for your Division. The most interesting item I have to report is that on 10th September, 1961, a meeting of 12 members meeting at my QTH for the usual monthly meeting. Quite a lot of business was handled and one of these days I'll be able to report that all our business was completed. Secretary Bill 4WS has a growing pile of correspondence we have obtained for him a nice new schedule, which would have been the night to read completely and which was dealt with. Treasurer Keith 4DG had his eagle eye roving about, but nobody was game to show him money. Ken 4WZ was the only tightest treasurer I've known for some time. Council approved "Ionospheric Predictions and Tables for Mystery" and "Radio Propagation and Recent Research" for November, so arrangements will be completed for a meeting on 10th November.

There is a proposal about to dispose of equipment that is not earning its keep in order to buy equipment that could be used by country people. This will not be a problem, as we don't start rushing. Discussion took place on "QTC" and by now you will have seen some of the results. Our main aim is to have the QTC but further improvement may result in its new form, "QTC" has been accepted for bulk postage registration by the P.M.G. Some of the local prospects are still being shown, but moving out soon. A quotation for QSL

records should shortly be accepted by the Tourist Bureau and they will be available before long.

Bert 4WX took ill after this meeting and his doctor took the aforementioned satchel away from him, although he was not ill. He requested in last month's notes for young help for other shoulders. Bert had one of the winter weeks, and was set back some weeks. But, he knows his own mind.

Ine August general meeting at our Elizabeth Street Rooms was held on Friday, 23th, with a full attendance of 20 members and 10 associates, with 4PR in the chair. We were pleased to have Jim 4HZ and associate Don Stewart from Central Queensland with us. General business dealt with a formal motion to include the cost of QTC in our annual fee. We have to show a charge to get registration. This only book entry like A.R. There were no reports, but a letter was read from the O.L.C. Ambergly, inviting members to visit the station on Saturday, October 7, at 3 p.m. Members will be shown the radio and radar installations. This should be a most interesting opportunity to advise the Secretary 4WX that they are coming.

The main business of the evening was on how to save someone else's life and, frankly, Jim 4HZ's appointment was very interesting. The subject of the meeting was in the hands of the State Superintendent of Surf Life Saving Clubs, Mr. J. Dearlove, who had Mr. Dots and a first aid instructor. One of our associates, Paul Rodoukoff, gave a commentary on a film he helped make two hat no major accidents. A formal motion was passed. David 4DP was called upon many times to give his opinion. The demonstration was extremely well organised by Mr. Dearlove and was well attended by many through and radar had jumped an hour. Discussion had to be brought to a halt at about 9.30 so that members could participate in the first aid course. After most of those present had completed several had been trained previously, a short comedy was shown, and it was time for supper. David 4DP, in the chair, was assisted by a medical nurse, who complimented them highly on their efficiency and sound training. While supper was on, Bob 4RB and Des Lane watched the film, and then the medical nurse folded paper pellets from a container to decide disposal items. 4VM had a run of luck to get three.

Reader will be pleased to hear that Steve 4DB has returned to Bundaberg. "Pop" 4AB helped look after him in Brisbane and will have him back in Bundaberg in the time this gets in print. Tom 4PD is assisting Mrs. R. Roberts in disposing of ex-4PR's gear. Ex-treasurer of the Division, 4WZ, is also along to help in this. To keep him posted with his QSLs. We remember the good work Charles did for the Division and also the work done by him in the last year when he was on the position of Outward QSL Officer at the same time.

4WZ showed acquaintance with another ex-VK4 Council member at the Royal Show in the person of Jack Farrel, of 4WZ. Jack was President of the Division some years ago before 4WZ was elected. Jack was very helpful on his efforts as Editor of the DX notes in this journal. At is one who keeps the inward and outward correspondence in the DX notes. This month's unclaimed QSL cards 4LJ, 4LK, 4MA, 4MD, 4NV, 4NM, 4MY, 4MW, 4N, 4P, 4Q, 4R, 4S, 4T, 4U, 4V, 4W, 4X, 4Y, 4Z, 4AA, 4AB, 4AC, 4AD, 4AE, 4AF, 4AG, 4AH, 4AI, 4AJ, 4AK, 4AL, 4AM, 4AN, 4AO, 4AP, 4AQ, 4AR, 4AS, 4AT, 4AU, 4AV, 4AW, 4AX, 4AY, 4AZ, 4BA, 4BB, 4BC, 4BD, 4BE, 4BF, 4BG, 4BH, 4BI, 4BJ, 4BK, 4BL, 4BM, 4BN, 4BO, 4BP, 4BQ, 4BR, 4BS, 4BT, 4BU, 4BV, 4BW, 4BX, 4BY, 4BZ, 4CA, 4CB, 4CC, 4CD, 4CE, 4CF, 4CG, 4CH, 4CI, 4CJ, 4CK, 4CL, 4CM, 4CN, 4CO, 4CP, 4CQ, 4CR, 4CS, 4CT, 4CU, 4CV, 4CW, 4CX, 4CY, 4CZ, 4DA, 4DB, 4DC, 4DD, 4DE, 4DF, 4DG, 4DH, 4DI, 4DJ, 4DK, 4DL, 4DM, 4DN, 4DO, 4DP, 4DQ, 4DR, 4DS, 4DT, 4DU, 4DV, 4DW, 4DX, 4DY, 4DZ, 4EA, 4EB, 4EC, 4ED, 4EE, 4EF, 4EG, 4EH, 4EI, 4EJ, 4EK, 4EL, 4EM, 4EN, 4EO, 4EP, 4EQ, 4ER, 4ES, 4ET, 4EU, 4EV, 4EW, 4EX, 4EY, 4EZ, 4FA, 4FB, 4FC, 4FD, 4FE, 4FF, 4FG, 4FH, 4FI, 4FJ, 4FK, 4FL, 4FM, 4FN, 4FO, 4FP, 4FQ, 4FR, 4FS, 4FT, 4FU, 4FV, 4FW, 4FX, 4FY, 4FZ, 4GA, 4GB, 4GC, 4GD, 4GE, 4GF, 4GG, 4GH, 4GI, 4GJ, 4GK, 4GL, 4GM, 4GN, 4GO, 4GP, 4GQ, 4GR, 4GS, 4GT, 4GU, 4GV, 4GW, 4GX, 4GY, 4GZ, 4HA, 4HB, 4HC, 4HD, 4HE, 4HF, 4HG, 4HH, 4HI, 4HJ, 4HK, 4HL, 4HM, 4HN, 4HO, 4HP, 4HQ, 4HR, 4HS, 4HT, 4HU, 4HV, 4HW, 4HX, 4HY, 4HZ, 4IA, 4IB, 4IC, 4ID, 4IE, 4IF, 4IG, 4IH, 4IJ, 4IK, 4IL, 4IM, 4IN, 4IO, 4IP, 4IQ, 4IR, 4IS, 4IT, 4IU, 4IV, 4IW, 4IX, 4IY, 4IZ, 4JA, 4JB, 4JC, 4JD, 4JE, 4JF, 4JG, 4JH, 4JI, 4JJ, 4JK, 4JL, 4JM, 4JN, 4JO, 4JP, 4JQ, 4JR, 4JS, 4JT, 4JU, 4JV, 4JW, 4JX, 4JY, 4JZ, 4KA, 4KB, 4KC, 4KD, 4KE, 4KF, 4KG, 4KH, 4KI, 4KJ, 4KK, 4KL, 4KM, 4KN, 4KO, 4KP, 4KQ, 4KR, 4KS, 4KT, 4KU, 4KV, 4KW, 4KX, 4KY, 4KZ, 4LA, 4LB, 4LC, 4LD, 4LE, 4LF, 4LG, 4LH, 4LI, 4LJ, 4LK, 4LL, 4LM, 4LN, 4LO, 4LP, 4LQ, 4LR, 4LS, 4LT, 4LU, 4LV, 4LW, 4LX, 4LY, 4LZ, 4MA, 4MB, 4MC, 4MD, 4ME, 4MF, 4MG, 4MH, 4MI, 4MJ, 4MK, 4ML, 4MN, 4MO, 4MP, 4MQ, 4MR, 4MS, 4MT, 4MU, 4MV, 4MW, 4MX, 4MY, 4MZ, 4NA, 4NB, 4NC, 4ND, 4NE, 4NF, 4NG, 4NH, 4NI, 4NJ, 4NK, 4NL, 4NM, 4NN, 4NO, 4NP, 4NQ, 4NR, 4NS, 4NT, 4NU, 4NV, 4NW, 4NX, 4NY, 4NZ, 4OA, 4OB, 4OC, 4OD, 4OE, 4OF, 4OG, 4OH, 4OI, 4OJ, 4OK, 4OL, 4OM, 4ON, 4OO, 4OP, 4OQ, 4OR, 4OS, 4OT, 4OU, 4OV, 4OW, 4OX, 4OY, 4OZ, 4PA, 4PB, 4PC, 4PD, 4PE, 4PF, 4PG, 4PH, 4PI, 4PJ, 4PK, 4PL, 4PM, 4PN, 4PO, 4PP, 4PQ, 4PR, 4PS, 4PT, 4PU, 4PV, 4PW, 4PX, 4PY, 4PZ, 4QA, 4QB, 4QC, 4QD, 4QE, 4QF, 4QG, 4QH, 4QI, 4QJ, 4QK, 4QL, 4QM, 4QN, 4QO, 4QP, 4QQ, 4QR, 4QS, 4QT, 4QU, 4QV, 4QW, 4QX, 4QY, 4QZ, 4RA, 4RB, 4RC, 4RD, 4RE, 4RF, 4RG, 4RH, 4RI, 4RJ, 4RK, 4RL, 4RM, 4RN, 4RO, 4RP, 4RQ, 4RR, 4RS, 4RT, 4RU, 4RV, 4RW, 4RX, 4RY, 4RZ, 4SA, 4SB, 4SC, 4SD, 4SE, 4SF, 4SG, 4SH, 4SI, 4SJ, 4SK, 4SL, 4SM, 4SN, 4SO, 4SP, 4SQ, 4SR, 4SS, 4ST, 4SU, 4SV, 4SW, 4SX, 4SY, 4SZ, 4TA, 4TB, 4TC, 4TD, 4TE, 4TF, 4TG, 4TH, 4TI, 4TJ, 4TK, 4TL, 4TM, 4TN, 4TO, 4TP, 4TQ, 4TR, 4TS, 4TT, 4TU, 4TV, 4TW, 4TX, 4TY, 4TZ, 4UA, 4UB, 4UC, 4UD, 4UE, 4UF, 4UG, 4UH, 4UI, 4UJ, 4UK, 4UL, 4UM, 4UN, 4UO, 4UP, 4UQ, 4UR, 4US, 4UT, 4UU, 4UV, 4UW, 4UX, 4UY, 4UZ, 4VA, 4VB, 4VC, 4VD, 4VE, 4VF, 4VG, 4VH, 4VI, 4VJ, 4VK, 4VL, 4VM, 4VN, 4VO, 4VP, 4VQ, 4VR, 4VS, 4VT, 4VU, 4VV, 4VW, 4VX, 4VY, 4VZ, 4WA, 4WB, 4WC, 4WD, 4WE, 4WF, 4WG, 4WH, 4WI, 4WJ, 4WK, 4WL, 4WM, 4WN, 4WO, 4WP, 4WQ, 4WR, 4WS, 4WT, 4WU, 4WV, 4WW, 4WX, 4WY, 4WZ, 4XA, 4XB, 4XC, 4XD, 4XE, 4XF, 4XG, 4XH, 4XI, 4XJ, 4XK, 4XL, 4XM, 4XN, 4XO, 4XP, 4XQ, 4XR, 4XS, 4XT, 4XU, 4XV, 4XW, 4XX, 4XY, 4XZ, 4YA, 4YB, 4YC, 4YD, 4YE, 4YF, 4YG, 4YH, 4YI, 4YJ, 4YK, 4YL, 4YM, 4YN, 4YO, 4YP, 4YQ, 4YR, 4YS, 4YT, 4YU, 4YV, 4YW, 4YX, 4YY, 4YZ, 4ZA, 4ZB, 4ZC, 4ZD, 4ZE, 4ZF, 4ZG, 4ZH, 4ZI, 4ZJ, 4ZK, 4ZL, 4ZM, 4ZN, 4ZO, 4ZP, 4ZQ, 4ZR, 4ZS, 4ZT, 4ZU, 4ZV, 4ZW, 4ZX, 4ZY, 4ZZ, 4AA, 4AB, 4AC, 4AD, 4AE, 4AF, 4AG, 4AH, 4AI, 4AJ, 4AK, 4AL, 4AM, 4AN, 4AO, 4AP, 4AQ, 4AR, 4AS, 4AT, 4AU, 4AV, 4AW, 4AX, 4AY, 4AZ, 4BA, 4BB, 4BC, 4BD, 4BE, 4BF, 4BG, 4BH, 4BI, 4BJ, 4BK, 4BL, 4BM, 4BN, 4BO, 4BP, 4BQ, 4BR, 4BS, 4BT, 4BU, 4BV, 4BW, 4BX, 4BY, 4BZ, 4CA, 4CB, 4CC, 4CD, 4CE, 4CF, 4CG, 4CH, 4CI, 4CJ, 4CK, 4CL, 4CM, 4CN, 4CO, 4CP, 4CQ, 4CR, 4CS, 4CT, 4CU, 4CV, 4CW, 4CX, 4CY, 4CZ, 4DA, 4DB, 4DC, 4DD, 4DE, 4DF, 4DG, 4DH, 4DI, 4DJ, 4DK, 4DL, 4DM, 4DN, 4DO, 4DP, 4DQ, 4DR, 4DS, 4DT, 4DU, 4DV, 4DW, 4DX, 4DY, 4DZ, 4EA, 4EB, 4EC, 4ED, 4EE, 4EF, 4EG, 4EH, 4EI, 4EJ, 4EK, 4EL, 4EM, 4EN, 4EO, 4EP, 4EQ, 4ER, 4ES, 4ET, 4EU, 4EV, 4EW, 4EX, 4EY, 4EZ, 4FA, 4FB, 4FC, 4FD, 4FE, 4FF, 4FG, 4FH, 4FI, 4FJ, 4FK, 4FL, 4FM, 4FN, 4FO, 4FP, 4FQ, 4FR, 4FS, 4FT, 4FU, 4FV, 4FW, 4FX, 4FY, 4FZ, 4GA, 4GB, 4GC, 4GD, 4GE, 4GF, 4GG, 4GH, 4GI, 4GJ, 4GK, 4GL, 4GM, 4GN, 4GO, 4GP, 4GQ, 4GR, 4GS, 4GT, 4GU, 4GV, 4GW, 4GX, 4GY, 4GZ, 4HA, 4HB, 4HC, 4HD, 4HE, 4HF, 4HG, 4HH, 4HI, 4HJ, 4HK, 4HL, 4HM, 4HN, 4HO, 4HP, 4HQ, 4HR, 4HS, 4HT, 4HU, 4HV, 4HW, 4HX, 4HY, 4HZ, 4IA, 4IB, 4IC, 4ID, 4IE, 4IF, 4IG, 4IH, 4IJ, 4IK, 4IL, 4IM, 4IN, 4IO, 4IP, 4IQ, 4IR, 4IS, 4IT, 4IU, 4IV, 4IW, 4IX, 4IY, 4IZ, 4JA, 4JB, 4JC, 4JD, 4JE, 4JF, 4JG, 4JH, 4JI, 4JJ, 4JK, 4JL, 4JM, 4JN, 4JO, 4JP, 4JQ, 4JR, 4JS, 4JT, 4JU, 4JV, 4JW, 4JX, 4JY, 4JZ, 4KA, 4KB, 4KC, 4KD, 4KE, 4KF, 4KG, 4KH, 4KI, 4KJ, 4KK, 4KL, 4KM, 4KN, 4KO, 4KP, 4KQ, 4KR, 4KS, 4KT, 4KU, 4KV, 4KW, 4KX, 4KY, 4KZ, 4LA, 4LB, 4LC, 4LD, 4LE, 4LF, 4LG, 4LH, 4LI, 4LJ, 4LK, 4LL, 4LM, 4LN, 4LO, 4LP, 4LQ, 4LR, 4LS, 4LT, 4LU, 4LV, 4LW, 4LX, 4LY, 4LZ, 4MA, 4MB, 4MC, 4MD, 4ME, 4MF, 4MG, 4MH, 4MI, 4MJ, 4MK, 4ML, 4MN, 4MO, 4MP, 4MQ, 4MR, 4MS, 4MT, 4MU, 4MV, 4MW, 4MX, 4MY, 4MZ, 4NA, 4NB, 4NC, 4ND, 4NE, 4NF, 4NG, 4NH, 4NI, 4NJ, 4NK, 4NL, 4NM, 4NN, 4NO, 4NP, 4NQ, 4NR, 4NS, 4NT, 4NU, 4NV, 4NW, 4NX, 4NY, 4NZ, 4OA, 4OB, 4OC, 4OD, 4OE, 4OF, 4OG, 4OH, 4OI, 4OJ, 4OK, 4OL, 4OM, 4ON, 4OO, 4OP, 4OQ, 4OR, 4OS, 4OT, 4OU, 4OV, 4OW, 4OX, 4OY, 4OZ, 4PA, 4PB, 4PC, 4PD, 4PE, 4PF, 4PG, 4PH, 4PI, 4PJ, 4PK, 4PL, 4PM, 4PN, 4PO, 4PP, 4PQ, 4PR, 4PS, 4PT, 4PU, 4PV, 4PW, 4PX, 4PY, 4PZ, 4QA, 4QB, 4QC, 4QD, 4QE, 4QF, 4QG, 4QH, 4QI, 4QJ, 4QK, 4QL, 4QM, 4QN, 4QO, 4QP, 4QQ, 4QR, 4QS, 4QT, 4QU, 4QV, 4QW, 4QX, 4QY, 4QZ, 4RA, 4RB, 4RC, 4RD, 4RE, 4RF, 4RG, 4RH, 4RI, 4RJ, 4RK, 4RL, 4RM, 4RN, 4RO, 4RP, 4RQ, 4RR, 4RS, 4RT, 4RU, 4RV, 4RW, 4RX, 4RY, 4RZ, 4SA, 4SB, 4SC, 4SD, 4SE, 4SF, 4SG, 4SH, 4SI, 4SJ, 4SK, 4SL, 4SM, 4SN, 4SO, 4SP, 4SQ, 4SR, 4SS, 4ST, 4SU, 4SV, 4SW, 4SX, 4SY, 4SZ, 4TA, 4TB, 4TC, 4TD, 4TE, 4TF, 4TG, 4TH, 4TI, 4TJ, 4TK, 4TL, 4TM, 4TN, 4TO, 4TP, 4TQ, 4TR, 4TS, 4TT, 4TU, 4TV, 4TW, 4TX, 4TY, 4TZ, 4UA, 4UB, 4UC, 4UD, 4UE, 4UF, 4UG, 4UH, 4UI, 4UJ, 4UK, 4UL, 4UM, 4UN, 4UO, 4UP, 4UQ, 4UR, 4US, 4UT, 4UU, 4UV, 4UW, 4UX, 4UY, 4UZ, 4VA, 4VB, 4VC, 4VD, 4VE, 4VF, 4VG, 4VH, 4VI, 4VJ, 4VK, 4VL, 4VM, 4VN, 4VO, 4VP, 4VQ, 4VR, 4VS, 4VT, 4VU, 4VV, 4VW, 4VX, 4VY, 4VZ, 4WA, 4WB, 4WC, 4WD, 4WE, 4WF, 4WG, 4WH, 4WI, 4WJ, 4WK, 4WL, 4WM, 4WN, 4WO, 4WP, 4WQ, 4WR, 4WS, 4WT, 4WU, 4WV, 4WW, 4WX, 4WY, 4WZ, 4XA, 4XB, 4XC, 4XD, 4XE, 4XF, 4XG, 4XH, 4XI, 4XJ, 4XK, 4XL, 4XM, 4XN, 4XO, 4XP, 4XQ, 4XR, 4XS, 4XT, 4XU, 4XV, 4XW, 4XX, 4XY, 4XZ, 4YA, 4YB, 4YC, 4YD, 4YE, 4YF, 4YG, 4YH, 4YI, 4YJ, 4YK, 4YL, 4YM, 4YN, 4YO, 4YP, 4YQ, 4YR, 4YS, 4YT, 4YU, 4YV, 4YW, 4YX, 4YY, 4YZ, 4ZA, 4ZB, 4ZC, 4ZD, 4ZE, 4ZF, 4ZG, 4ZH, 4ZI, 4ZJ, 4ZK, 4ZL, 4ZM, 4ZN, 4ZO, 4ZP, 4ZQ, 4ZR, 4ZS, 4ZT, 4ZU, 4ZV, 4ZW, 4ZX, 4ZY, 4ZZ, 4AA, 4AB, 4AC, 4AD, 4AE, 4AF, 4AG, 4AH, 4AI, 4AJ, 4AK, 4AL, 4AM, 4AN, 4AO, 4AP, 4AQ, 4AR, 4AS, 4AT, 4AU, 4AV, 4AW, 4AX, 4AY, 4AZ, 4BA, 4BB, 4BC, 4BD, 4BE, 4BF, 4BG, 4BH, 4BI, 4BJ, 4BK, 4BL, 4BM, 4BN, 4BO, 4BP, 4BQ, 4BR, 4BS, 4BT, 4BU, 4BV, 4BW, 4BX, 4BY, 4BZ, 4CA, 4CB, 4CC, 4CD, 4CE, 4CF, 4CG, 4CH, 4CI, 4CJ, 4CK, 4CL, 4CM, 4CN, 4CO, 4CP, 4CQ, 4CR, 4CS, 4CT, 4CU, 4CV, 4CW, 4CX, 4CY, 4CZ, 4DA, 4DB, 4DC, 4DD, 4DE, 4DF, 4DG, 4DH, 4DI, 4DJ, 4DK, 4DL, 4DM, 4DN, 4DO, 4DP, 4DQ, 4DR, 4DS, 4DT, 4DU, 4DV, 4DW, 4DX, 4DY, 4DZ, 4EA, 4EB, 4EC, 4ED, 4EE, 4EF, 4EG, 4EH, 4EI, 4EJ, 4EK, 4EL, 4EM, 4EN, 4EO, 4EP, 4EQ, 4ER, 4ES, 4ET, 4EU, 4EV, 4EW, 4EX, 4EY, 4EZ, 4FA, 4FB, 4FC, 4FD, 4FE, 4FF, 4FG, 4FH, 4FI, 4FJ, 4FK, 4FL, 4FM, 4FN, 4FO, 4FP, 4FQ, 4FR, 4FS, 4FT, 4FU, 4FV, 4FW, 4FX, 4FY, 4FZ, 4GA, 4GB, 4GC, 4GD, 4GE, 4GF, 4GG, 4GH, 4GI, 4GJ, 4GK, 4GL, 4GM, 4GN, 4GO, 4GP, 4GQ, 4GR, 4GS, 4GT, 4GU, 4GV, 4GW, 4GX, 4GY, 4GZ, 4HA, 4HB, 4HC, 4HD, 4HE, 4HF, 4HG, 4HH, 4HI, 4HJ, 4HK, 4HL, 4HM, 4HN, 4HO, 4HP, 4HQ, 4HR, 4HS, 4HT, 4HU, 4HV, 4HW, 4HX, 4HY, 4HZ, 4IA, 4IB, 4IC, 4ID, 4IE, 4IF, 4IG, 4IH, 4IJ, 4IK, 4IL, 4IM, 4IN, 4IO, 4IP, 4IQ, 4IR, 4IS, 4IT, 4IU, 4IV, 4IW, 4IX, 4IY, 4IZ, 4JA, 4JB, 4JC, 4JD, 4JE, 4JF, 4JG, 4JH, 4JI, 4JJ, 4JK, 4JL, 4JM, 4JN, 4JO, 4JP, 4JQ, 4JR, 4JS, 4JT, 4JU, 4JV, 4JW, 4JX, 4JY, 4JZ, 4KA, 4KB, 4KC, 4KD, 4KE, 4KF, 4KG, 4KH, 4KI, 4KJ, 4KK, 4KL, 4KM, 4KN, 4KO, 4KP, 4KQ, 4KR, 4KS, 4KT, 4KU, 4KV, 4KW, 4KX, 4KY, 4KZ, 4LA, 4LB, 4LC, 4LD, 4LE, 4LF, 4LG, 4LH, 4LI, 4LJ, 4LK, 4LL, 4LM, 4LN, 4LO, 4LP, 4LQ, 4LR, 4LS, 4LT, 4LU, 4LV, 4LW, 4LX, 4LY, 4LZ, 4MA, 4MB, 4MC, 4MD, 4ME, 4MF, 4MG, 4MH, 4MI, 4MJ, 4MK, 4ML, 4MN, 4MO, 4MP, 4MQ, 4MR, 4MS, 4MT, 4MU, 4MV, 4MW, 4MX, 4MY, 4MZ, 4NA, 4NB, 4NC, 4ND, 4NE, 4NF, 4NG, 4NH, 4NI, 4NJ, 4NK, 4NL, 4NM, 4NN, 4NO, 4NP, 4NQ, 4NR, 4NS, 4NT, 4NU, 4NV, 4NW, 4NX, 4NY, 4NZ, 4OA, 4OB, 4OC, 4OD, 4OE, 4OF, 4OG, 4OH, 4OI, 4OJ, 4OK, 4OL, 4OM, 4ON, 4OO, 4OP, 4OQ, 4OR, 4OS, 4OT, 4OU, 4OV, 4OW, 4OX, 4OY, 4OZ, 4PA, 4PB, 4PC, 4PD, 4PE, 4PF, 4PG, 4PH, 4PI, 4PJ, 4PK, 4PL, 4PM, 4PN, 4PO, 4PP, 4PQ, 4PR, 4PS, 4PT, 4PU, 4PV, 4PW, 4PX, 4PY, 4PZ, 4QA, 4QB, 4QC, 4QD, 4QE, 4QF, 4QG, 4QH, 4QI, 4QJ, 4QK, 4QL, 4QM, 4QN, 4QO, 4QP, 4QQ, 4QR, 4QS, 4QT, 4QU, 4QV, 4QW, 4QX, 4QY, 4QZ, 4RA, 4RB, 4RC, 4RD, 4RE, 4RF, 4RG, 4RH, 4RI, 4RJ, 4RK, 4RL, 4RM, 4RN, 4RO, 4RP, 4RQ, 4RR, 4RS, 4RT, 4RU, 4RV, 4RW, 4RX, 4RY, 4RZ, 4SA, 4SB, 4SC, 4SD, 4SE, 4SF, 4SG, 4SH, 4SI, 4SJ, 4SK, 4SL, 4SM, 4SN, 4SO, 4SP, 4SQ, 4SR, 4SS, 4ST, 4SU, 4SV, 4SW, 4SX, 4SY, 4SZ, 4TA, 4TB, 4TC, 4TD, 4TE, 4TF, 4TG, 4TH, 4TI, 4TJ, 4TK, 4TL, 4TM, 4TN, 4TO, 4TP, 4TQ, 4TR, 4TS, 4TT, 4TU, 4TV, 4TW, 4TX, 4TY, 4TZ, 4UA, 4UB, 4UC, 4UD, 4UE, 4UF, 4UG, 4UH, 4UI, 4UJ, 4UK, 4UL, 4UM, 4UN, 4UO, 4UP, 4UQ, 4UR, 4US, 4UT, 4UU, 4UV, 4UW, 4UX, 4UY, 4UZ, 4VA, 4VB, 4VC, 4VD, 4VE, 4VF, 4VG, 4VH, 4VI, 4VJ, 4VK, 4VL, 4VM, 4VN, 4VO, 4VP, 4VQ, 4VR, 4VS, 4VT, 4VU, 4VV, 4VW, 4VX, 4VY, 4VZ, 4WA, 4WB, 4WC, 4WD, 4WE, 4WF, 4WG, 4WH, 4WI, 4WJ, 4WK, 4WL, 4WM, 4WN, 4WO, 4WP, 4WQ, 4WR, 4WS, 4WT, 4WU, 4WV, 4WW, 4WX, 4WY, 4WZ, 4XA, 4XB, 4XC, 4XD, 4XE, 4XF, 4XG, 4XH, 4XI, 4XJ, 4XK, 4XL, 4XM, 4XN, 4XO, 4XP, 4XQ, 4XR, 4XS, 4XT, 4XU, 4XV, 4XW, 4XX, 4XY, 4XZ, 4YA, 4YB, 4YC, 4YD, 4YE, 4YF, 4YG, 4YH, 4YI, 4YJ, 4YK, 4YL, 4YM, 4YN, 4YO, 4YP, 4YQ, 4YR, 4YS, 4YT, 4YU, 4YV, 4YW, 4YX, 4YY, 4YZ, 4ZA, 4ZB, 4ZC, 4ZD, 4ZE, 4ZF, 4ZG, 4ZH, 4ZI, 4ZJ, 4ZK, 4ZL, 4ZM, 4ZN, 4ZO, 4ZP, 4ZQ, 4ZR, 4ZS, 4ZT, 4ZU, 4ZV, 4ZW, 4ZX, 4ZY, 4ZZ, 4AA, 4AB, 4AC, 4AD, 4AE, 4AF, 4AG, 4AH, 4AI, 4AJ, 4AK, 4AL, 4AM, 4AN, 4AO, 4AP, 4AQ, 4AR, 4AS, 4AT, 4AU, 4AV, 4AW, 4AX, 4AY, 4AZ, 4BA, 4BB, 4BC, 4BD, 4BE, 4BF, 4BG, 4BH, 4BI, 4BJ, 4BK, 4BL, 4BM, 4BN, 4BO, 4BP, 4BQ, 4BR, 4BS, 4BT, 4BU, 4BV, 4BW, 4BX, 4BY, 4BZ, 4CA, 4CB, 4CC, 4CD, 4CE, 4CF, 4CG, 4CH, 4CI, 4CJ, 4CK, 4CL, 4CM, 4CN, 4CO, 4CP, 4CQ, 4CR, 4CS, 4CT, 4CU, 4CV, 4CW, 4CX, 4CY, 4CZ, 4DA, 4DB, 4DC, 4DD, 4DE, 4DF, 4DG, 4DH, 4DI, 4DJ, 4DK, 4DL, 4DM, 4DN, 4DO, 4DP, 4DQ, 4DR, 4DS, 4DT, 4DU, 4DV, 4DW, 4DX, 4DY, 4DZ, 4EA, 4EB, 4EC, 4ED, 4EE, 4EF, 4EG, 4EH, 4EI, 4EJ, 4EK, 4EL, 4EM, 4EN, 4EO, 4EP, 4EQ, 4ER, 4ES, 4ET, 4EU, 4EV, 4EW, 4EX, 4EY, 4EZ, 4FA, 4FB, 4FC, 4FD, 4FE, 4FF, 4FG, 4FH, 4FI, 4FJ, 4FK, 4FL, 4FM, 4FN, 4FO, 4FP, 4FQ, 4FR, 4FS, 4FT, 4FU, 4FV, 4FW, 4FX, 4FY, 4FZ, 4GA, 4GB, 4GC, 4GD, 4GE, 4GF, 4GG, 4GH, 4GI, 4GJ, 4GK, 4GL, 4GM, 4GN, 4GO, 4GP, 4GQ, 4GR, 4GS, 4GT, 4GU, 4GV, 4GW, 4GX, 4GY, 4GZ, 4HA, 4HB, 4HC, 4HD, 4HE, 4HF, 4HG, 4HH, 4HI, 4HJ, 4HK, 4HL, 4HM, 4HN, 4HO, 4HP, 4HQ, 4HR, 4HS, 4HT, 4HU, 4HV, 4HW, 4HX, 4HY, 4HZ, 4IA, 4IB, 4IC, 4ID, 4IE, 4IF, 4IG, 4IH, 4IJ, 4IK, 4IL, 4IM, 4IN, 4IO, 4IP, 4IQ, 4IR, 4IS, 4IT, 4IU, 4IV, 4IW, 4IX, 4IY, 4IZ, 4JA, 4JB, 4JC, 4JD, 4JE, 4JF, 4JG, 4JH, 4JI, 4JJ, 4JK, 4JL, 4JM, 4JN, 4JO, 4JP, 4JQ, 4JR, 4JS, 4JT, 4JU, 4JV, 4JW, 4JX, 4JY, 4JZ, 4KA, 4KB, 4KC, 4KD, 4KE, 4KF, 4KG, 4KH, 4KI, 4KJ, 4KK, 4KL, 4KM, 4KN, 4KO, 4KP, 4KQ, 4KR, 4KS, 4KT, 4KU, 4KV, 4KW, 4KX, 4KY, 4KZ, 4LA, 4LB, 4LC, 4LD, 4LE, 4LF, 4LG, 4LH, 4LI, 4LJ, 4LK, 4LL, 4LM, 4LN, 4LO, 4LP, 4LQ, 4LR, 4LS, 4LT, 4LU, 4LV, 4LW, 4LX, 4LY, 4LZ, 4MA, 4MB, 4MC, 4MD, 4ME, 4MF, 4MG, 4MH, 4MI, 4MJ, 4MK, 4ML, 4MN, 4MO, 4MP, 4MQ, 4MR, 4MS, 4MT, 4MU, 4MV, 4MW, 4MX, 4MY, 4MZ, 4NA, 4NB, 4NC, 4ND, 4NE, 4NF, 4NG, 4NH, 4NI, 4NJ, 4NK, 4NL, 4NM, 4NN, 4NO, 4NP, 4NQ, 4NR, 4NS, 4NT, 4NU, 4NV, 4NW, 4NX, 4NY, 4NZ, 4OA, 4OB, 4OC, 4OD, 4OE, 4OF, 4OG, 4OH, 4OI, 4OJ, 4OK, 4OL, 4OM, 4ON, 4OO, 4OP, 4OQ, 4OR, 4OS, 4OT, 4OU, 4OV, 4OW, 4OX, 4OY, 4OZ, 4PA, 4PB, 4PC, 4PD, 4PE, 4PF, 4PG, 4PH, 4PI, 4PJ, 4PK, 4PL, 4PM, 4PN, 4PO, 4PP, 4PQ, 4PR, 4PS, 4PT, 4PU, 4PV, 4PW, 4PX, 4PY, 4PZ, 4QA, 4QB, 4QC, 4QD, 4QE, 4QF, 4QG, 4QH, 4QI, 4QJ, 4QK, 4QL, 4QM, 4QN, 4QO, 4QP, 4QQ, 4QR, 4QS, 4QT, 4QU, 4QV, 4QW, 4QX, 4QY, 4QZ, 4RA, 4RB, 4RC, 4RD, 4RE, 4RF, 4RG, 4RH, 4RI, 4RJ, 4RK, 4RL, 4RM, 4RN, 4RO, 4RP, 4RQ, 4RR, 4RS, 4RT, 4RU, 4RV, 4RW, 4RX, 4RY, 4RZ, 4SA, 4SB, 4SC, 4SD, 4SE, 4SF, 4SG, 4SH, 4SI, 4SJ, 4SK, 4SL, 4SM, 4SN, 4SO, 4SP, 4SQ, 4SR, 4SS, 4ST, 4SU, 4SV, 4SW, 4SX, 4SY, 4SZ, 4TA, 4TB, 4TC, 4TD, 4TE, 4TF, 4TG, 4TH, 4TI, 4TJ, 4TK, 4TL, 4TM, 4TN, 4TO, 4TP, 4TQ, 4TR, 4TS, 4TT, 4TU, 4TV, 4TW, 4TX, 4TY, 4TZ, 4UA, 4UB, 4UC, 4UD, 4UE, 4UF, 4UG, 4UH, 4UI, 4UJ, 4UK, 4UL, 4UM, 4UN, 4UO, 4UP, 4UQ, 4UR, 4US, 4UT, 4UU, 4UV, 4UW, 4UX, 4UY, 4UZ, 4VA, 4VB, 4VC, 4VD, 4VE, 4VF, 4VG, 4VH, 4VI, 4VJ, 4VK, 4VL, 4VM, 4VN, 4VO, 4VP, 4VQ, 4VR, 4VS, 4VT, 4VU, 4VV, 4VW, 4VX, 4VY, 4VZ, 4WA, 4WB, 4WC, 4WD, 4WE, 4WF, 4WG, 4WH, 4WI, 4WJ, 4WK, 4WL, 4WM, 4WN, 4WO, 4WP, 4WQ, 4WR, 4WS, 4WT, 4WU, 4WV, 4WW, 4WX, 4WY, 4WZ, 4XA, 4XB, 4XC, 4XD, 4XE, 4XF, 4XG, 4XH, 4XI, 4XJ, 4XK, 4XL, 4XM, 4XN, 4XO, 4XP, 4XQ, 4XR, 4XS, 4XT, 4XU, 4XV, 4XW, 4XX, 4XY, 4XZ, 4YA, 4YB, 4YC, 4YD, 4YE, 4YF, 4YG, 4YH, 4YI, 4YJ, 4YK, 4YL, 4YM, 4YN, 4YO, 4YP, 4YQ, 4YR, 4YS, 4YT, 4YU, 4YV, 4YW, 4YX, 4YY, 4YZ, 4ZA, 4ZB, 4ZC, 4ZD, 4ZE, 4ZF, 4ZG, 4ZH, 4ZI, 4ZJ, 4ZK, 4ZL, 4ZM, 4ZN, 4ZO, 4ZP, 4ZQ, 4ZR, 4ZS, 4ZT, 4ZU, 4ZV, 4ZW, 4ZX, 4ZY, 4ZZ, 4AA, 4AB, 4AC, 4AD, 4AE, 4AF, 4AG, 4AH, 4AI, 4AJ, 4AK, 4AL, 4AM, 4AN, 4AO, 4AP, 4AQ, 4AR, 4AS, 4AT, 4AU, 4AV, 4AW, 4AX, 4AY, 4AZ, 4BA, 4BB, 4BC, 4BD, 4BE, 4BF, 4BG, 4BH, 4BI, 4BJ, 4BK,



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O-12

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TS4A

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AG-9U

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C-3U

### HEATHKIT AUDIO VALVE-MILLIVOLT METER (AV3U)

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CM-1U

### HEATHKIT DIRECT READING CAPACITANCE METER (CM-1U)

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TX1

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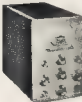
Match unbalanced coaxial lines with this convenient transmitter accessory. Weight 5 1/2 lb. Price £10/1/-.

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### HEATHKIT C.W. TRANSMITTER KIT (DX-20)

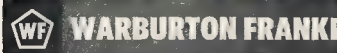
Best value for £ value. Clear view. Single knob band-switching. Covers 80-10 metres. Using crystal or an external V.F.O. Weight 18 lb. Price £40/6/-.



SB-10

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Phone BA 7615. (Prices slightly higher in W.A.)  
SYDNEY: 307 Kent Street — — Phone 29-1111





## WESTERN AUSTRALIA

Well the most important month of the year has passed and much activity was listened to in the R.D. Contest. What a crowded section of the spectrum during the 20 hour period and what a pity a little more of the same activity is not heard at other times. However, considering the conditions on the high frequency bands, it is not a bad thing to have such a contest. Certainly fortunate with the excellent operators on all bands between VK6 and the other sides. Now we patiently wait for results and post mortem.

The monthly meeting was held on 18th Aug. at the usual place and was well attended. Heard of one of our regular visitors telling a metropolitan member he should put his name in the visitor's column. Nice going Herbie. After business was concluded, VAG gave his long-outdated lecture on "Gains" and its hows and whys. It was well worth waiting for Wally and many of us were much wiser when you finished. The meeting concluded with an auction sale of equipment belonging to 6VWH. This was ably conducted by GJK and bidding was quite animated although some members hesitated to bid long and let the goods go with the help of 6CWW, most members carried something home.

Activity on 40 mhz was enlivened during the month by the invasion of VK6 by some ten VKCAs who prowled around the country with mobile gear, no doubt trying to learn the secret of the large signal heard from VK6 from 6AG, 6CL, 6KJ, 6LG and others. By the way, since he has become a gentleman of the evening lecture on "Gains" and its hows and whys, giving much helpful advice to new members in his own whimsical way.

6RG is gradually overcoming his t.v. problems and also DX'ing very successfully on the higher bands. Heard Bob and AGC having a discussion one night on t.v. It would have made good sense to have the benefit of others, especially with comments from 6WL added. These boys certainly have their problems.

Many strange noises are heard here on the 80 mhz. band. Operators become interested in 80 mhz. However, most of them are not hard to resolve even on my over-worked ARS. Perhaps they are trying to work the band and start something to fill the bands myself. There are seldom more than the same five or six on 80 mhz at night, although there are plenty of contacts with some States and start and end at present. However, with so many new call signs due on the bands, it may improve. There are some unfortunates in regard to t.v. Some of our most consistent operators are between a hundred and two hundred miles from Perth and this is considered a disadvantage. The benefit of others, direction there are no t.v. problems at present is due west. 6WL at Bunbury is one call sign missing on 80 mhz. Bob is about 100 miles approximately 150 miles south of the t.v. dx. Of course any interference must be caused by his being on the air. I wonder if 6ZL could give him any hints?

Well chaps, enough for this month as we must leave some space for 6PS with his comments on the 20 hour period and the contest on their VK6 tour—73, 6ZCZK per 6LS.

— . . . —

## TASMANIA

The R.D. Contest is over for this year, bar the shouting and the checking of logs. Some observations can be made at this stage however. First, there were fewer VK6's than in any other part this year, probably about 45 to the best of my knowledge. Secondly, the average of the VK6's was better than in any other year. Thirdly, in my opinion, VK6 is the State to issue a real challenge to us, their effort was commendable. Fourth, 6BQ should have been used up with his great effort. Seventhly, the effort from VK3 appeared to be most disappointing. Eighthly, the effort from the other side of the Contest was not as good. More participation from that Division, even though they are only one point per contact for us. Congrats to 72B, ex-72AU. Ted obtained

his full licence early in August and has been heard particularly on 40 mhz.

Although I am writing this before the Hobbies Exhibition has taken place, I want to thank all the helpers for their invaluable assistance in making the exhibition enjoyable and operating. Although I cannot mention every one who took part, yet I want to thank Michael, 7ZAY who spent his holidays to wait upon the exhibit throughout the duration of the exhibition, to Terry 7ZT for the loan of his 100 mhz. Ham Radio, to the committee, v.h.f. rig, to Ken 7KA for the loan of his National rig, and to many others I cannot name, for instance for the loan of antennas masts, etc.

Jack 7JB is at present constructing a "small" rig, with an 807 in the final, to run about 60w. Jack describes this rig as a semi-portable, and it is designed for operation during the Jamboree-on-the-Air on 21st and 22nd October. Jack intends to use this rig upon completion while he reconstructs his big rig, and t.v. proofs same.

While on the subject of the Jamboree, remember to take part by having Section at your station, give the boys the chance to talk to others of their way of thinking—it is great fun. Also remember a social lunch at a local cafe beginning at 1200 hours on Friday, 30th Oct., admission £1 per head, profits to go to the fund raising committee for our projected club rooms.

Bob TOM is on the air to a much greater extent these days. He tells me things have eased off a bit at work, and he is now on the air. An unusual call sign was heard about the middle of August, namely, 7JD, with ample speech clipping. How about repeating the dose Troy? 73, 72Z.

## NORTH WESTERN ZONE

News is rather scarce this month with the usual sporadic activity. One September Zone meeting was fairly well attended. A second helping of a lecture on a.s.b. was given by Ken 7AL, who certainly knows his subject. Like many of us, I have some reservations, for fear that we said something silly, but I feel sure we gained some real knowledge as a result of the evening. 7ZXL again showed a fine turn of skill in the role of auctioneer and some classic examples of junk chasing hands.

Spent a couple of interesting evenings with 7KS last month. Quite an experience to work familiar voices from a new rig. It's happened to me last night. Talked to 7KS and the rig had to be shut down during the recuperation period. There is a lesson to be learned somewhere here. Saw a couple of the boys in the morning, and they were a bit sudden windstorm that swept across us the other night. They were rubbing their hands, counting the number of times the wind had blown down. Wonder why? Sam 7SM is still collecting rare DX. I must ask him how many countries? I am sure it would be rather surprising.

This Zone has been asked to support a Hobbies Exhibition at Devonport in November with a couple of 60 mhz. rigs. I have been asked to show off our paces, so rally round chaps. Associate Bob Simpson sold us the idea. He doesn't know what it is going to cost him though.

Altho 7LR, a call sign familiar pre-war, is talking of making a come-back to the bands more than 60 mhz. There is much competition in this area in 80 mhz signal reports from 7L. Have been forced to install a secret weapon to maintain prestige. Even got to stage where competitors believe I am using a secret weapon: hi. Has anybody a recipe for bringing a Tasmanian tiger out of hibernation. If so we will give it a try. I think I have done some horrible things to Ham Radio. Everywhere one sees Hams busy selling them, repairing them, building them or watching them with their hands on their hips, waiting for an alternative. And it's happened here—a pity.

Finally, it's a small world. Met 7YL 3XU in southern corner of Tasmania the other day. After a brief chat, he said, "So off and clear until next month. 73, 7MX."

## NORTHERN ZONE

During a recent visit to Hobart I was asked if the Northern Zone was still alive, so may a few words would not be amiss. I would like to let the rest of the gang know what we are doing. Twelve members and one prospective member attended the August meeting, which was held at the QTH of yours truly (7ZB) at 11 Mayne St., Launceston. The usual business was attended to and members were recommended to huddle to the R.D. Contest. Den 7DK has power troubles and is operating on 7L at present (still seems to get out OK). Col 7LZ brought along a transistor tape re-

order for our inspection and it played a portion of the meeting with Max 7KA at the controls. Very nice but the 50 db. is a bit high for most of us. After the meeting all adjourned to the shack to inspect the partially completed 3 mhz rig that I hope to get on the air shortly. Later members were shown some color slides taken on a recent visit to Hobart. The evening concluded with supper as usual.

Last month there was a fair amount of activity on 144 Mc, with 7ZBE and 7ZAL who were located at Kelso, Northern Tas., on regular checks with L'vov. Also Peter 7TP portable 2 mhz using a 5 ft. beam at Eyvendale contacted 7ZAX at Lenah Valley, Hobart, and was heard on 144 Mc. About 1000 hours, 7ZAL has received GSI card confirmation, 73, 7ZJ.

## HAMADS

Minimum 5/-, for thirty words.

Extra words, 2d. each.

Advertisements under this heading will only be accepted from institutions or members who desire to dispose of equipment which is their own personal property. Copy must be received at P.O. Box 86, East Melbourne, C.T. Vic., by 5th of the month, and retransmission should be made in advertisement. Call signs are now permitted in Hamads. Dealers' advertisements not accepted in this column.

**FOR SALE:** Collins Mechanical Filter, Type F 455C-31, 3 kc. bandwidth, little used, £20. AR7 complete, ordinary plus bandspread boxes, modified with Q Mult., hot on 20, £40. BC314G Receiver, 150 kc. to 1500 kc., has 100 kc. i.f.s., £20. 24TG30/- ea. 4-20As, new £6, used £3. Complete Transmitter, Gelo so to 6146, incl. p.s. and mods., £45. VK3ACN, N. Stilwell, Box 104, Bendigo.

**FOR SALE:** One set of eight unused Bamboo Poles for Quad Antenna. £3 ex Croydon or plus freight. A. Roudie VK3UJ, Croydon Way, Croydon, Phone (bus. hrs.) 69-1159.

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# "AMATEUR RADIO"

is the official journal of the Wireless Institute of Australia and was first issued on 1st October, 1933, by authority of the Council of the Victorian Division, the present publishers.

The Wireless Institute of Australia was founded in 1910 to promote interest in Amateur Radio; today each State has its own Division who is responsible for intrastate matters. Each elects a member to Federal Council who delegates to Federal Executive the task of implementing their decisions on Interstate matters. The Federal Executive is nominated by Victorian Division and these nominations are ratified by all Divisions.

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The W.I.A. is a non-commercial society with honorary office-bearers. Every Sunday the Divisions make official broadcasts from their WI transmitters and these sessions are designed to bring to all interested parties the news and views of that Division. Scheduled broadcast times are given below.

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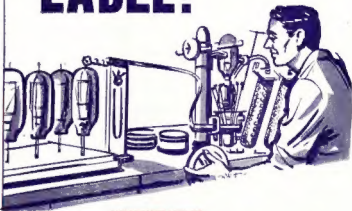
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